



over Story:

SCIENCES

Pipeline project Page 30

**10** Winning combination—fast dewatering, easy forming

**52** New tricks with sheet piles on grade separation

**108** Slip forms speed building of Hawaiian cement plant

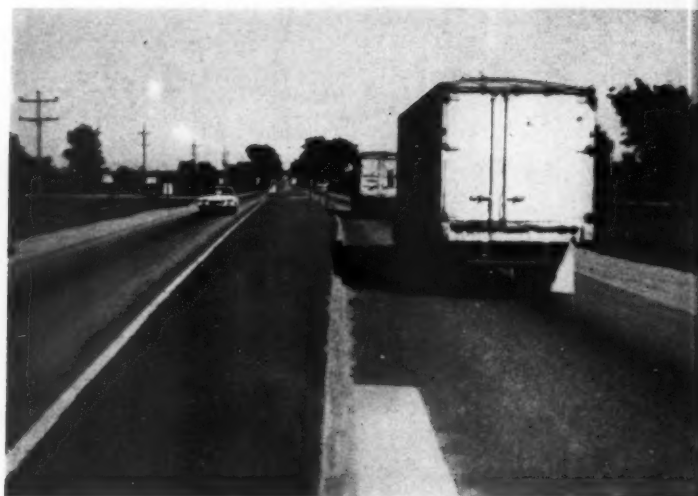
# CONTRACTORS and ENGINEERS

MAGAZINE OF MODERN CONSTRUCTION





Illinois Route 125, five miles west of Springfield. Texaco Asphalt pavement laid by P. H. Broughton and Sons.



Illinois Route 88 near Walnut. Paved with Texaco Asphalt by J. P. Hollerich Company. Note asphalt center island.

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Illinois Route 80 in Jo-Daviess County. Texaco Asphalt pavement laid by Rock Road Construction Company.

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# CONTRACTORS and ENGINEERS

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Backfilling dry dock.

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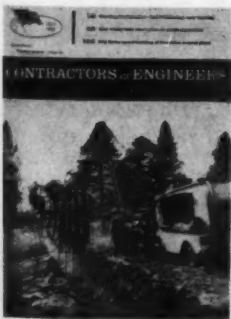
Interstate route grading.

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Precast-stone screen.

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## COVER:

Cradled by an Allis-Chalmers HD-19 side-boom tractor, a Gardner-Denver quad drill sinks 4 holes at a time in rock too tough for rippers in the H. C. Price spread working on the Transwestern gas pipeline in Arizona. Air is supplied by a LeRoi 1,200-cfm rotary compressor towed by the tractor. *Page 30*

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## Foreign Surplus Equipment



At this writing, the construction industry is facing a man-made problem over the importation of foreign-excess construction machinery. A bill now before Congress could be interpreted to permit the admission into this country of considerable quantities of government surplus equipment from overseas. How did such equipment get abroad in the first place? Most of this surplus has been used at U. S. military and naval bases overseas, and some of it even goes back to operations during the Korean war. This is all American-made equipment, bought originally by the government for use at overseas bases. Now a handful of importers want to buy this machinery from the government and dispose of it in this country.

No one appears to know just how much of this machinery is lying around. But during the first nine months of 1959, the disposal by sale of domestic surplus equipment amounted to about \$10 million. The latter figure is based on acquisition cost. No inventory lists are available, nor can the present condition of this foreign-generated excess equipment be ascertained. The three or four importers who want to get this equipment in their hands make the point that by the introduction of American bidders in the sale, the government would get a higher price for the machines than it would if they were disposed of to foreign buyers only.

American trade associations, such as the Construction Industry Manufacturers Association and the Associated Equipment Distributors, have countered this specious reasoning by calling attention to some of the detrimental effects of such imports. In manufacturing industries where this surplus equipment competes with new products, there would be a loss of production and employment, together with a resulting decrease in tax revenue on federal, state, and local levels. Equipment distributors would feel the pinch in sales of both new and used products. The ultimate user, a contractor whose equipment consists of nonsurplus products, would be confronted with a competitive disadvantage by a contractor who bought up some of this surplus equipment.

Such dumping on the American market of this surplus stock would encourage marginal operators to become contractors. In a price war of underbidding each other in order to get the jobs, many of these new con-

tractors, as well as old established firms, are bound to suffer. Under peacetime conditions there has never been a domestic shortage of construction machinery in this country. Last year, as a matter of record, the construction-equipment industry operated at only 60 per cent of plant capacity. Contractors, too, according to seasonal variations, are not using from 30 to 60 per cent of their equipment inventory. Many of them would be willing to sell their own excess equipment if suitable buyers were available.

Any prospective buyer of government overseas excess property would have to beware of what is offered. Equipment that is designed and built for some overseas crash program may vary widely from a similar-looking rig that is sold competitively in the domestic market. The former may be turned out quickly with a limited time period of built-in usability according to specifications written for a particular purpose. Should one of these machines be bought for use in a specific situation or to work with materials not in the original intention, the unit might well fail. This would result in a financial loss to the contractor-purchaser and could be a reflection on the manufacturer, however blameless he may be.

By now, too, much of this foreign-surplus equipment is outmoded and outdated. Newer and more efficient machines with greater production capacities are continually being developed by construction-industry manufacturers. In the highway field, specifications are being established for a desired performance of equipment that would automatically eliminate the use of substandard products. Thus, experienced purchasers would be wary of acquiring any "bargains" in foreign surplus. However, the importation of overseas government excess property, under the bill H.R. 9996, would be harmful to our construction industry, no matter how well informed we might be as to its inherent dangers.

Congress hopes to adjourn by July 9 because of the oncoming Presidential election campaign. If this bill is not checked in the present session, it might very well come up the next time Congress meets. In the meantime, it behooves those in the construction industry to keep aware of this pending legislation and to let their representatives in the House and Senate know of their feelings on the measure.

## CONTRACTORS and ENGINEERS

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# Progress Report

The modern road-building era began four years ago this month with the Federal-Aid Highway Act of 1956.

Almost \$8 billion has been spent since then to build a system of interstate superhighways. Interstate mileage completed since July 1, 1956, has cost \$3.26 billion. Of this, \$2.51 billion has gone into actual construction and \$752 million into engineering and right-of-way costs.

Work currently under way or authorized on the Interstate System involves another \$4.64 billion of contracts.

An additional \$9 billion has been invested in the ABC program for construction of those primary roads not on the Interstate System and secondary "farm-to-market" roads.

What has the nation gained for these expenditures?

Traffic was rolling on 8,855 miles—more than one-fifth of the Interstate System—as of the latest Bureau of Public Roads progress report. This was for the quarter ending March 31.

Another 4,353 miles of superhighways was under construction, and either the preliminary engineering work was in progress or the right-of-way was purchased on an additional 10,436 miles as of that date.

Almost half of the mileage open to traffic—4,114 miles—has been built or improved under the "90 per cent federal, 10 per cent state" cost-sharing arrangement set up by the 1956 Federal-Aid Highway Act.

Toll roads, bridges, and tunnels not built under the 1956 law, but which qualified by construction and design standards for inclusion in the Interstate System, accounted for another 2,274 completed miles.

Almost 120,000 miles of work on the ABC system has been completed or is under contract.

Contracts involving 96,563 miles of primary and secondary roads have been completed since July 1, 1956, at a cost of \$5.84 billion. Another 22,764 miles of work is under way.

This progress toward solving what would surely have developed into a traffic crisis comes none too soon. Latest census figures show that between 1950 and 1959, while the population as a whole was increasing by 16 per cent, the population surrounding central cities was growing by 44 per cent. What was virtually open country when the great road debate was going on in the early '50's is now thickly populated with families whose way of life depends on automobiles.

The comprehensive approach to road building is already demonstrating what can be done to eliminate the urban-metropolitan problems that threaten our living habits and our commerce.

The threat of traffic strangulation is receding under a well organized program calculated to meet not only present needs but those of 15 years from now.

Four years of experience with the accelerated road program suggests the value of scaling public works to public needs.

## NATIONAL SYSTEM OF INTERSTATE AND DEFENSE HIGHWAYS Mileage Improved As Of March 31, 1960

STATE	OPEN TO TRAFFIC	UNDER WAY	REMAINING MILEAGE	STATE	OPEN TO TRAFFIC	UNDER WAY	REMAINING MILEAGE
Alabama	59.5	360.6	453.8	Nevada	56.2	158.6	319.2
Alaska	---	---	---	New Hampshire	50.0	38.6	124.6
Arizona	514.1	162.4	484.7	New Jersey	89.3	82.7	199.5
Arkansas	41.2	460.4	16.1	New Mexico	287.0	70.5	645.4
California	491.2	1,192.8	498.9	New York	629.6	361.6	236.0
Colorado	206.5	211.6	537.8	North Carolina	245.7	203.4	324.1
Connecticut	131.1	132.4	34.3	North Dakota	174.1	75.7	320.1
Delaware	3.5	27.6	9.2	Ohio	432.9	449.1	587.3
Florida	81.8	227.1	833.3	Oklahoma	283.3	279.3	233.0
Georgia	132.5	272.7	706.2	Oregon	400.0	127.5	283.9
Hawaii	---	---	---	Pennsylvania	559.5	344.1	627.4
Idaho	76.3	288.3	246.2	Rhode Island	20.0	4.7	46.4
Illinois	404.7	692.6	510.9	South Carolina	53.6	273.2	354.4
Indiana	175.4	386.4	543.1	South Dakota	63.7	331.5	282.4
Iowa	125.4	343.1	238.5	Tennessee	7.2	390.0	650.3
Kansas	346.0	147.8	308.7	Texas	730.0	1,562.0	738.7
Kentucky	67.9	255.3	374.2	Utah	47.0	200.3	674.4
Louisiana	5.3	339.7	335.3	Vermont	7.8	144.6	168.8
Maine	75.0	70.4	166.6	Virginia	140.6	454.7	471.4
Maryland	114.9	206.8	32.2	Washington	289.8	318.3	118.8
Massachusetts	162.8	151.7	147.4	West Virginia	86.0	99.6	208.8
Michigan	270.1	467.5	336.9	Wisconsin	138.8	313.7	---
Minnesota	78.8	310.5	503.5	Wyoming	84.2	182.4	648.8
Mississippi	29.1	316.9	325.9	Dist. of Col.	3.9	12.1	16.8
Missouri	308.1	748.7	43.5	Puerto Rico	---	---	---
Montana	49.1	385.6	744.9				
Nebraska	26.4	134.2	328.0				
				TOTAL	8,854.9	14,709.3	16,960.6

CONTRACTORS and ENGINEERS table from Bureau of Public Roads release 60-13



## BEST BET FOR BIG BIDS

Let Goodyear show you ways to cut your tire costs

Competition for big jobs keeps you on your toes. That's why it pays to do everything possible to protect your profit margin. And much of your success on the big jobs rides on the tires you use.

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# Surveying Washington

by E. E. Halmos, Jr.



## Construction industry damaged by interstate road hearings

Make no mistake about the effect on your business and your dealings with the public and government of those recent hearings into the interstate highway program before the



House Special Subcommittee on Public Works. (See June column.) The effect is going to be serious.

Aside from the political implications, some solid facts were developed: A state highway department's inspection procedures were shown to

be slipshod at the very least, and a contractor built a road without paying much attention to specifications—and was permitted to do so.

Whether or not there was anything criminal in the activity is not relatively important—that's for the local courts in Tulsa to decide. Whether or not this is an isolated instance—of little importance in view of the overall size of the interstate program—isn't particularly important either.

Because, like it or not, the impression was made that such things do happen. And the implication that they could—and maybe have—happened in many places is very strong in the minds of the public and of congressmen. It poses a major public-relations job for the construction industry, which now must fight on the defensive to prove to the public that it is not, as a general rule, somehow stealing from the public in this huge program. The same kind of public-relations job has to be done by state and federal officials, who must now look

with suspicion on almost every inch of road that is let to contract or is under construction.

One result has been immediate action by the Bureau of Public Roads to demand that area BPR engineers make spot checks at random on completed projects before approving them. Another result: action to post signs on all federal-aid projects, warning all parties that penalties are heavy for malpractice of any kind. In addition, AASHTO officials have been meeting in an attempt to draw up new guide lines for testing, placing of materials, record keeping, and the like.

## Interstate road hearings become political fodder

As to the hearings themselves, there probably won't be any more before Congress adjourns this month—although the committee staff is supposed to have a list of more than 20 instances of hanky-panky similar to that in Oklahoma.

And the political aspects are already developing. The four committee Republicans took the House floor to charge that the committee was "stacked" (with 12 Democrats) and that its staff hadn't concentrated on helpful suggestions.

But even the Republican members, intent though they were on protecting the incumbent administration and its agencies, had to admit they were "shocked" at the disclosures of apparently deliberate falsification of soil samples and other tests.

Witness after witness at the hearing had testified that tests of base and subbase material showed improper depths, improper compaction, and other irregularities, but that the tests were "corrected" in the laboratory on the job, or were not reported. Again, it is true (and it wasn't brought out) that some of the tests varied from specifications by a minor and meaningless degree (93 per cent Proctor instead of the required 95 per cent, for instance). But according to expert testimony introduced toward the end of the week-long hearings, 70 to 80 per cent of the base and 90 per cent of the subbase did not meet specifications for quality. Depth of material ranged from nothing at all to the required thickness as to quantity.

It doesn't appear that there will be any legislative action this time—not enough time remains for that as these words are written—but it is obvious that when a new Congress returns in January, it will be loaded for bear in this regard.

The result is very likely to be an increase in BPR supervision, a tightening of contract provisions, and a continuing and suspicious eye on the contractors.

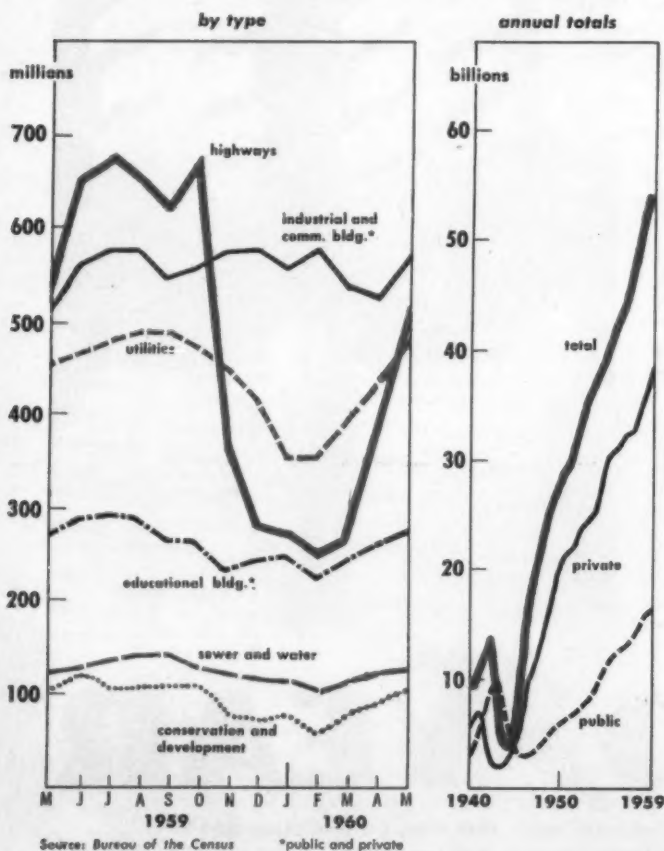
## Spending for utilities work shows no sign of slackening

While the government was going about its construction appropriations, the utilities section of private industry showed no sign of slackening in its plans for spending.

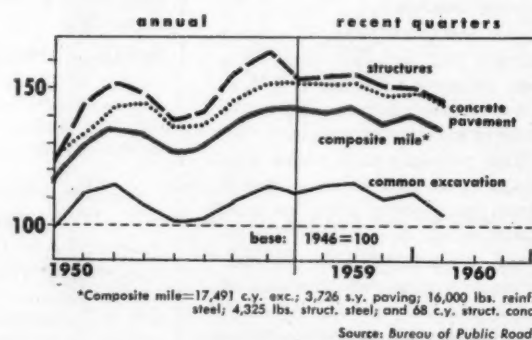
During the month of May alone,

## Industry Trends

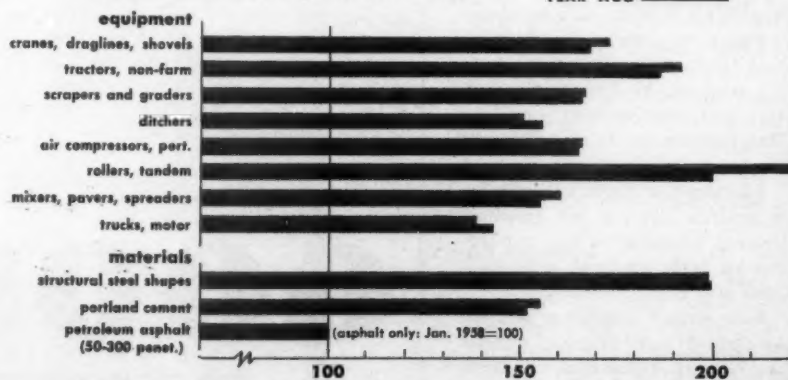
### DOLLAR VALUE OF NEW CONSTRUCTION Recent Monthly Trends



### AVERAGE BID PRICES Federal Aid Highway Construction



### PRICE INDEX 1947-1949 = 100



CONTRACTORS AND ENGINEERS

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eight electric utilities reported to the Securities and Exchange Commission that they planned to spend about \$495 million on construction within what remains of 1960. Eight gas utilities proposed spending \$161.3 million. Other private investors reported plans for \$24.6 million worth of additions to manufacturing plants, construction of motels, and other items.

### Non-controversial bills grind through before closing

On legislation in general, Congressional action was speeding up, late in June, to the point where it was becoming difficult to make guesses as to the final action on much that is of interest to construction men.

As you know, House and Senate passed widely differing versions of school-aid and construction measures, and a conference committee



hadn't yet acted to resolve major differences. (The House version contained the controversial "Powell amendment" that would cut off federal aid from schools that do not accept integration; the Senate version contained an equally controversial amendment that would devote part of the money to teachers' salaries.)

The "Area Assistance Bill" (also known as the Depressed Areas Bill) had been passed by both houses, vetoed, and the veto sustained. Several substitute measures were also in the hopper, and whether action would be taken before the session ended was problematical.

But appropriations measures were grinding through steadily, and with relatively little change or debate. All of which adds up to the prediction earlier in these columns that Congressional accomplishments would cover only a limited area—just the needed appropriations, plus some politically pleasant other matters, and that's all.

### Appropriations stay high for 1960 military work

Construction contractors now have assurance—through the 1960 military construction appropriations—that business will be good in this area.

The \$1.07 billion military construction appropriation, significantly, includes some \$400 million for work concerned with missiles—operation, testing, and training facilities.

Of the total military construction funds, the Air Force, as usual, gets the lion's share—\$726 million. The Army gets \$147 million, the Navy, \$126 million. A total of 3,050 units of Capehart Housing is included.

Add that over-all total to the \$890-odd million Civil Works construction bill by the U. S. Army Corps of Engineers, and the \$270-odd million for

the Bureau of Reclamation, and you have a total federal contribution in these areas alone of about \$2.2 billion. Congressional committees hacked away at the appropriations, but the result was more a reshuffling of some expenditures than actual cuts.

### Corps injunction upheld on waterways cleanup

An industry may not disregard orders from the Corps of Engineers requiring cleanup of navigable waterways. That's the gist of a Supreme

Court decision affecting three steel plants on the Calumet River.

According to testimony, the three industries discharge solid wastes that have shoaled up the river channel by several feet over the years, but have refused to dredge the stream beyond their own docks since 1951. The Corps of Engineers got a lower-court injunction ordering the dredging.

The high court (in a 5 to 4 decision) said the Corps has the right to injunctive relief to protect the navigable capacity of a stream.

### Number of construction firms hits all-time high in 1960

Perhaps the underlying reason for bid prices getting tighter and tighter over the past year lies in growing competition.

The U. S. Department of Commerce reports that as of January 1, 1960, there was a total of 473,000 construction companies in operation—an all-time high and 2 per cent over estimates for 1959. Of these, 66,000 were new firms that entered the business in 1959.



## NEW CAT SYNCHROTOUCH TRANSMISSION CONTROL STEPS UP PRODUCTION 10 TO 15%!

**THE JOB:** Site improvement for Marple-Newtown Jr. High School, Pa. Clearing and grubbing...cut and fill...moving 40,000 cu. yd. of dirt to level area around the school.

**CONTRACTOR:** Hugh Boyd, Inc., W. Conshohocken, Pa.

**EQUIPMENT:** Two Cat DW21G-470B units with SynchroTouch Transmission Control and one Cat D8H Tractor with Power Shift Transmission.

When this picture was taken, the job was 25% ahead of schedule. Owner Hugh Boyd gave most of the credit to his new Caterpillar equipment. He said: "The SynchroTouch Transmission Control on the DW21s increases production 10 to 15% due to faster operation and less operator fatigue. The Power Shift Transmission on the D8 cuts operator fatigue 30%, permits smooth contact with the scraper and takes it out of the cut in third gear with no hesitation to shift."

Have you checked what SynchroTouch Transmission Control can do for you? To shift gears, the operator simply dials the desired gear for automatic, split-second response. A standard foot clutch is used only when starting from standstill. Results: faster shifting for faster cycles and more payloads per hour. Lessened operator fatigue for more daily production.

Compared with previous models, the new 345 HP

two-wheel DW21G and four-wheel DW20G Tractors deliver 12% higher rimpull producing up to 20% faster travel speeds under similar haul road conditions. Their new LOWBOWL Scrapers (470B and 456B, respectively) are rated at 19.5 cu. yd. struck; 27 cu. yd. heaped. With optional SynchroTouch Transmission Control, they're designed to move more dirt faster and cheaper than any competitive unit. Ask your Caterpillar Dealer to show how he can step up production for you!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

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**BOOST PRODUCTION  
WITH SynchroTouch  
TRANSMISSION CONTROL**





## Tricks of the Trade

### Small "Texas tower" rig drills underwater trench

■ A job-built miniature Texas tower drilled the trench for a 30-inch submarine pipeline running out to sea for unloading ocean-going tankers at the new Standard Oil Co. (Calif.) refinery at Barber's Point on the Hawaiian island of Oahu. The trench lies on the lee side of a stone jetty that extends nearly half a mile from shore to the breaker line.

The Bechtel-Hawaiian Dredging joint venture building the new \$40 million refinery (the first in Hawaii) had to run a 30-inch pipeline out to deep water where the tankers, bringing the crude oil from the Middle East and Sumatra, can anchor and unload. From shore to the breaker line at the edge of the coral reef, the pipeline was placed in a trench and covered for protection from wave action. Beyond the reef, it lies on the ocean bottom.

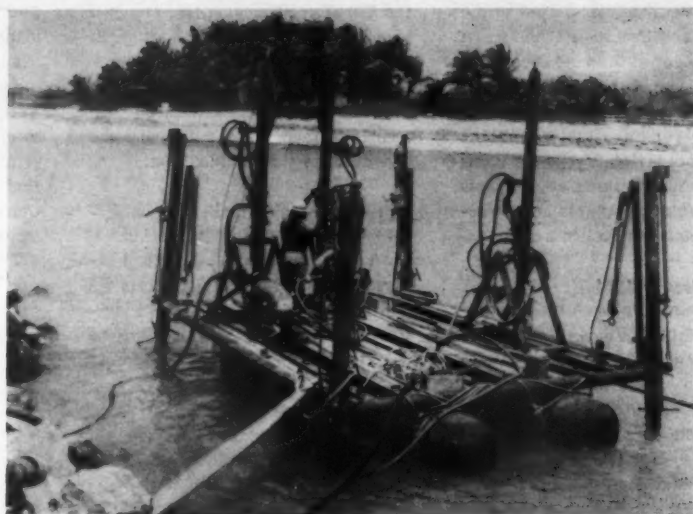
To dig the trench and place the pipe, the contractor first constructed a stone jetty extending at an angle from the beach to the breaker line. The jetty broke the force of the waves, providing a protected area in which it was possible to work. The jetty also served as the roadway from which the cranes dug the trench and laid the pipe.

However, the hard coral had to be drilled as much as 16 feet deep and shot before the trench could be excavated. It looked like a tough drilling assignment until superintendent Melvin Bender came up with the idea of the miniature Texas tower.

Using available materials, Bender's crew built a pipe frame on which they mounted three Joy wagon drills. The drills ride on longitudinal steel rails and can be moved along from one end of the rig to the other to drill a series of holes in a line. Each corner of the deck was fitted with a pipe sleeve to receive the legs that support the rig on the ocean bottom. These 6-inch steel pipe legs toe out slightly to give the rig stability.

Beneath the platform, the crew lashed two steel pontoons of the type used to support floating dredge pipe. These were simply lashed to the deck with rope.

To get the rig into working position, the four pipe legs were dropped to the ocean bottom. Then the deck was jacked up level and to the desired elevation by the use of four Yale



## LUBE LOGIC

## Five tips to

### How to return stored engines to service

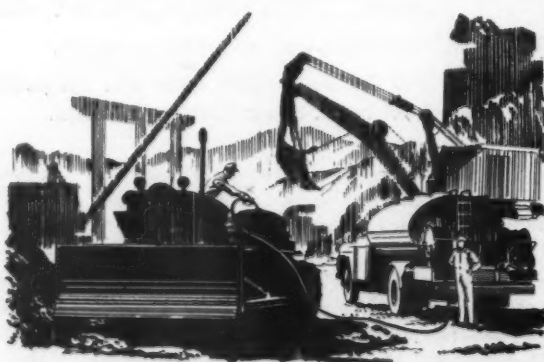
In a previous issue of Lube Logic we gave you an 11-point program designed to protect gasoline and diesel engines during long idle periods. Now we'd like to finish what we started by describing the routine for taking engines out of storage and putting them back into action.

- 1 Where Texaco Rustproof Compound L has been applied to exterior of engine, remove with kerosene.
- 2 Remove waterproof paper and tape from all openings.
- 3 Remove spark plugs. Clean them and check the gap settings before replacing.
- 4 Remove distributor cap and clean Texaco Rustproof Compound L thoroughly from lobe of breaker cams. Replace cap.

- 5 Check the level of the crankcase oil. If it's at the full mark, there's no need to drain the oil before operating the engine unless it requires a different grade. If the oil has fallen below the full mark during storage, drain the engine and locate the oil leak, and repair it, then refill with the proper grade of oil, before operating the engine. The first oil change after the engine is back in service should be made in half the usual period.

- 6 Check the cooling system for leaks, and add water or Texaco PT Anti-Freeze if necessary. It's not necessary to drain and flush if the cooling system was filled with a rust-inhibited anti-freeze before storage.

- 7 Fill the fuel system, start the engine, and let it run for a while. Check the oil pressure, and check for overheating and oil and fuel leaks.



### End-of-shift is the best fueling time

They say there's a time and a place for everything, and for refueling equipment the best time is at the end of each day's work. And here are two reasons why. End-of-shift minimizes the possibility of fuel-tank rusting, because there's no room for condensate to form in a tank that's full of gasoline or diesel fuel. And tank-bottom sediment, stirred up by pumping in fuel, has a chance to settle down overnight, so it won't be drawn into the fuel line.



### Spark plug tip: Degrease before you blast

Don't depend on your spark plug cleaner to do everything. As a matter of fact, you can actually make things worse by blasting an oil-fouled plug. Heavy oil deposits on the plug will pick up the abrasive and hold it in the recesses between the shell and the insulator. Result: burning and ultimate failure because these deposits can seriously affect the spark plug's ability to dissipate heat at high engine speeds.

**Moral:** degrease oil plugs in a suitable solvent and dry them before you blast.



come-alongs — hand-operated pull lifts. At the desired height, pins were inserted in holes in the pipe legs below the sleeves. In this position, the platform was very stable and was not affected by the moderate wave action in the lee of the jetty.

For moving ahead, the platform was lowered until it floated on the pontoons. Then the legs were raised off the bottom by a block-and-tackle arrangement at each corner. The crew pushed or poled the rig ahead one length, set the legs back down,

jacked the platform up and drilled the next set of holes.

Air for the drills was supplied by 500 and 600-cfm Gardner-Denver air compressors standing on the jetty. At intervals along its length, the jetty was widened to provide turn-around space for the "Eucs" that were building it. These spaces also accommodated the two compressors, leaving the jetty road open. This enabled the drilling crew to get started from the beach while the jetty was still being extended out into the surf.



**Drag  
removes  
track  
marks**

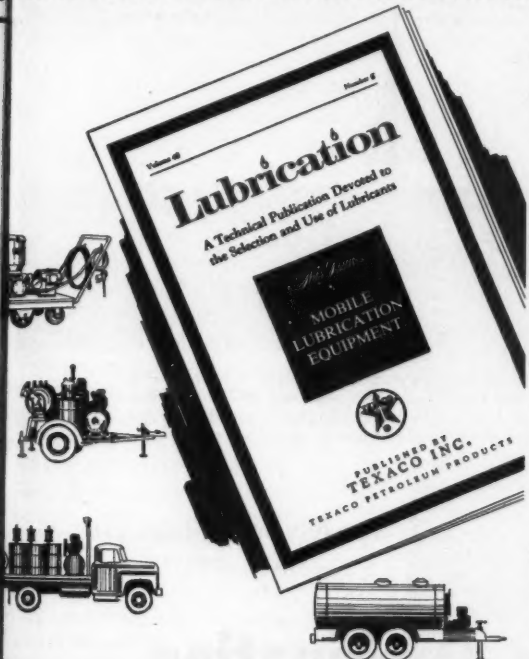
## prolong equipment service life

### The whole truth about mobile LUBE RIGS

- What good lube rigs are made of—the products and the dispensing equipment.
- How to use lube records to make your rig more valuable.
- Special purpose lube rigs.
- Pros and cons of mobile and centralized lubrication.

What does it take to make a mobile lube rig? What do you put on it? How do you use it? The questions have been coming in so fast lately that Texaco has devoted a whole issue of its magazine, *Lubrication*, to answering them: the March 1960 issue, titled "Mobile Lubrication Equipment."

Lubrication is a major factor in cost control, and lube rigs can be a major factor in thorough maintenance, so send for your free copy of the March *Lubrication*. Supply of these valuable booklets is limited, so if you want one, send in your request now to Texaco Inc., 135 East 42nd Street, New York 17, N. Y., Dept. CO-11.



■ The relative ease of compaction of cement-treated base course is one of the features many contractors like about this type of construction. But this easy compaction sometimes leads to troubles when the spreading equipment leaves tracks that show up in the finished surface.

On a base and bituminous paving job on Interstate 15 in southwestern Utah, V. C. Mendenhall Co., Las Vegas, Nev., encountered such a problem and found the solution to it. The contractor was mixing the CTB material in a stationary plant, hauling it to the road in big dump trucks, and spreading the lift with a Jersey spreader attached to the front of a Cat D8.

A Buffalo-Springfield 10-ton 3-wheel roller was doing a satisfactory job of compacting the 4-inch lift in just two passes. But the marks made by the tractor-spreader showed up in the finishing. Eliminating these tracks with a motor grader meant extra work and an additional pass with the roller.

Mendenhall came up with a simple, job-made device that looked a bit crude, but worked.

The device consists of two short lengths of heavy (No. 11) reinforcing bar attached to a triangular frame made of 1/2-inch bars. The frame attaches to the tractor drawbar, and one of the heavy bars trails directly behind each of the tractor tracks. As the rig moves along, these drags completely eliminate the marks made by the tractor's pads and grousers.

For the benefit of the photographer, the workman raised one of the drag bars out of the material. Note that the material in the right foreground shows no sign of the tractor having just passed over it.

### AWS bibliography, 1959

■ A 1959 Supplement to the American Welding Society Bibliographies has been prepared, listing all articles that appeared in the Welding Journal last year. Inserted into the original Bibliographies, it provides a complete record of the journal's articles from 1937.

Copies may be obtained for \$1.50 from the AWS, Dept. T, 33 W. 39th St., New York 18, N. Y.

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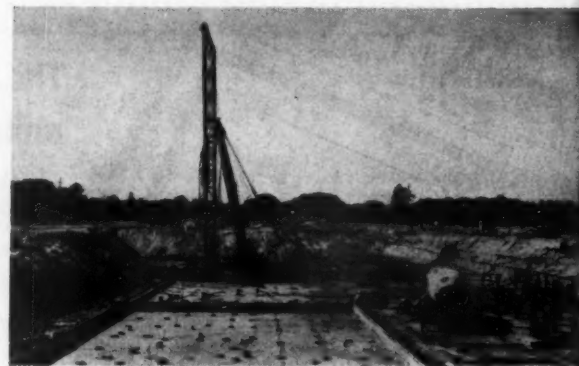
A Griffin Wellpoint system, with one specially built Griffin pump, keeps the site of this Jacksonville, Fla., sewage-disposal plant dewatered through construction. Water is drawn down to at least minus 17 feet by almost 400 wellpoints.



This Griffin Wellpoint pump, the only pump on the job, keeps the entire treatment-plant area dewatered. More than 1,500 feet of 8 and 10-inch-diameter header pipe was required around the work area.



Installation of the Griffin system around the site allows a Raymond pile-driving rig to sink 12-inch-diameter piles to refusal for a foundation slab. The 3-inch-diameter points, about 21½ feet in length, are each inside a sand-wick column some 24 feet in depth.



A section of concrete slab for the plant is formed with wood. The cylindrical piles were cut off three inches above ground before being filled with concrete. In the background, the Raymond pile-driving rig is at work.

by TONY MAVROUDIS, field editor

## A winning combination on sewage-plant project

High-capacity dewatering, easy forming  
are big features of treatment-plant job



A combination of steel scaffolding and timber shoring supports horizontal and vertical Efcu steel form panels as an American crane uses a laydown bucket to place concrete for one of the partition walls of the primary settling tank.



Efcu steel panels are used for the 18-inch-thick circular wall of the digestion tank. The outside form has 2 x 2-foot panels along the base; fillers between panels provide a greater circumference for the outside wall.

An elaborate high-capacity wellpoint installation and a versatile set of forms made work on the new sewage-disposal plant for Jacksonville, Fla., a smooth-running, clean, and efficient operation.

Sullivan, Long & Hagerty, Birmingham, Ala., the contractor for the \$3,500,000 treatment plant, had two major problems to overcome before the job attained its present efficiency.

The first major setback was encountered soon after site excavation got under way. Original ground ele-

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Allis-Chalmers tractors push and pull a scraper to full load during the 40,000-yard site excavation job. Most of the earthmoving was handled without a wellpoint system; track-type tractors were used because of the muddy conditions.



As excavation deepened, scrapers almost came to resemble amphibious rigs. Natural ground at the site is at plus 11 feet; ground-water level is at plus 7 or 8 feet. Later, the 400-wellpoint system went into operation.

vation was at about plus 11 feet and the ground-water level at plus 7 or 8 feet. The excavation, handled by tractor-drawn scrapers, amounted to over 40,000 cubic yards of material. Most of this was moved without the wellpoints being used, and it was a common sight to see the tractors working in water almost to the top of their tracks.

#### Wellpoints installed

The contractor installed a Griffin Wellpoint system to draw down the ground-water level to below the foundation elevations of the various sewage-plant structures. The deepest foundation, located at minus 16 feet for the main pumping station, required a draw-down to at least minus 17 feet.

Over 1,500 linear feet of 8 and 10-inch-diameter header pipe was required to encircle the main pumping station, grit tank, pre-aeration tank, primary settling tanks, and the primary digestion tank and control building. One specially built Griffin Wellpoint pump is now being used to completely dewater the entire project site.

Almost 400 points had to be installed throughout the site. Each 3-inch-diameter point, about 21½ feet long, was positioned inside an 8-inch-diameter sand-wick column going down 23 feet 7 inches below the surface.

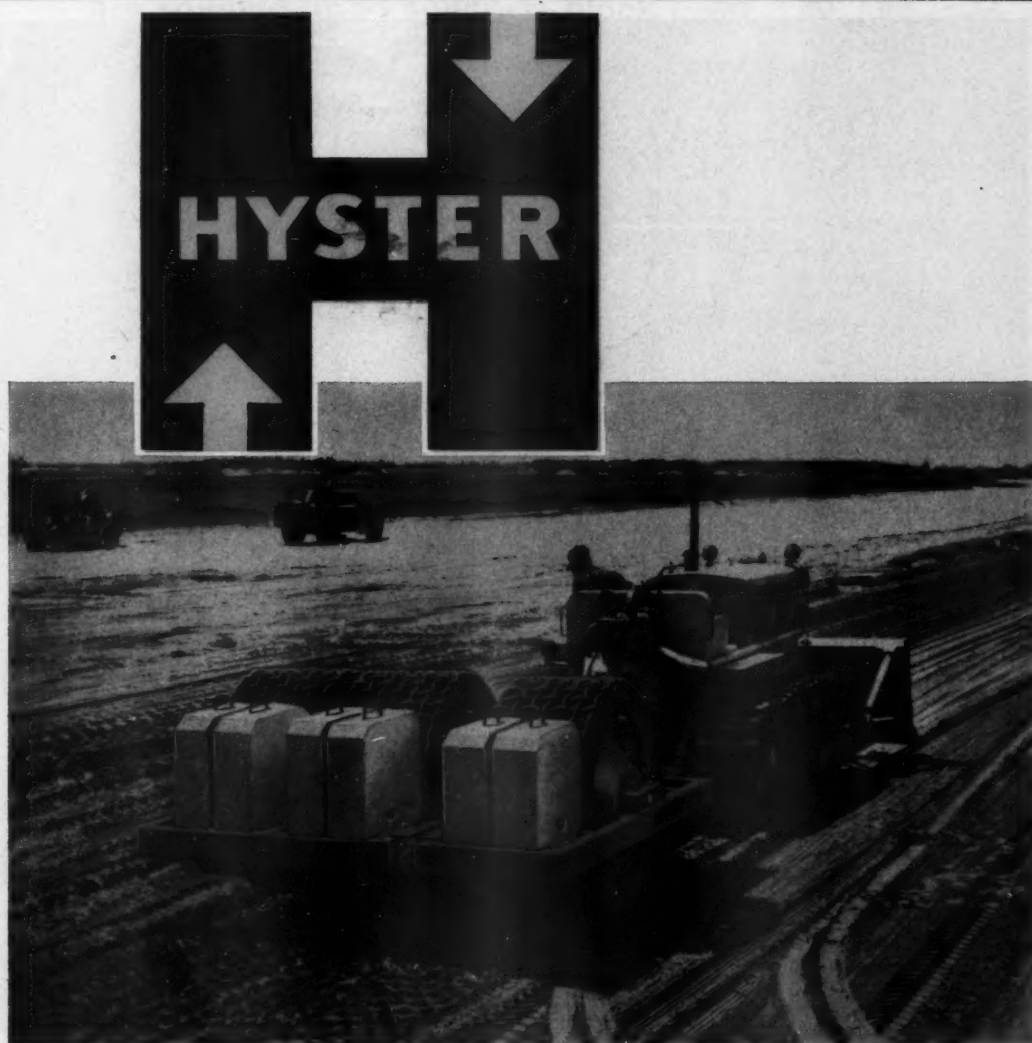
This sand wick was formed by driving a steel casing, removing the material inside, positioning the point, and backfilling the casing with sand as it was being withdrawn from the ground.

#### Foundation piles

Once the area was dewatered, the pile-driving operations got under way. This phase of the job was handled by Raymond International. Over 71,400 linear feet of 12-inch-diameter cylindrical steel piling was driven to refusal and filled with concrete. The average length of the piles was 50 feet. Piles were cut off 3 inches above the ground before concrete was placed.

The bottom mat of reinforcing steel for the various foundation slabs was laid directly on the 3-inch pile protrusions. Foundation slabs averaged

(Continued on next page)



## New Another Compaction Development HYSTER® has it!

New Hyster three-drum Model D "Grid" and Tamping rollers cover 10 feet at a pass—increase production—reduce costs.

Two-drum units already in the field are easily converted to three-drum machines—hinge attachment of third drum frame prevents bridging when rolling uneven surfaces.

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Working on land-clearing operations at the start of the project, this tractor uses its clearing blade to push a huge tree stump onto a trailer hauling from the site.

The 110-foot-diameter floor slab for the digestion tank is shaped with forming for the concentric rings to obtain the required sloping surface. A Marion crane swings a laydown bucket over one ring that has reinforcing set over cylindrical piles. Piles are driven in each level portion between rings. The American is driving these steel piles.



(Continued from preceding page)

18 inches in thickness, with only one exception. This was the 2½-foot-thick foundation slab for the main pumping station.

#### Concrete forming

Over 20,000 square feet of Efc steel form panels is being used to shape the 16,000 cubic yards of concrete required for the various structures. The contractor found these panels extremely versatile and adaptable to whatever type of surface had to be formed.

The digestion tank, for example, has a circular 18-inch-thick wall 110 feet in diameter. The 2x4-foot panels are used to form this wall by simply stacking and clipping them together. The narrow flanges of the panels are flexible enough to conform easily with the circular shape. Bracing is used for only the inside panels which are tied to the outside panels by metal spacers.

The base of the outside form was shaped by using 2 x 4-foot panel sections. A narrow filler section, used between the 2 x 4-foot panels, compensated for the larger circumference of the outside form.

These same panels also won contractor approval in forming the Y-walls of the primary settling tanks. All that was required to form the Y-walls was narrow filler sections which were pre-bent 45 degrees to shape the transition between the vertical and the bend. For vertical walls, the panels are stacked one on top of another; for horizontal pours, the contractor is using a combination of steel scaffolding and timber shores. Forms are generally stripped 48 hours after concrete is placed, and are scraped and oiled before re-use.

The new treatment plant, to be completed by March, 1961, is the first facility of its type to be built to service Jacksonville. It will be fed by an 84-inch-diameter influent line now being installed. The plant designers, Metcalf & Eddy, Boston, Mass., have made provisions in this contract for future expansion that allows for the addition of another pump station, primary settling tanks, and digestion tanks.

L. F. Galloway is the superintendent for Sullivan, Long & Hagerty.

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CONTRACTORS AND ENGINEERS

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## GENERAL TIRES

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The toughest jobs on your schedule are the sure-profit jobs when you put tough-built General Off-the-Road Tires to work. Thanks to General's own Nygen® cord construction, you're sure of maximum protection against all in-the-field cut, bruise and snag damage. What's more, General's power-drive tread assures full-time traction and flotation whatever the going. Result: less downtime for more profit on every job. Prove it to yourself soon! Why not now?

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An artist's conception of the highway-dam project in southwestern Utah, where Interstate 15 crosses the crest of the earth-fill Ash Creek Dam. The road commission and the Utah Water and Power Board decided on the dam instead of a bridge at the site, where the creek formerly ran through a canyon.



## Rock-fill dam serves as highway embankment

"Just a left-handed job," is the way project manager R. J. Jones characterized his problems during the construction of Ash Creek Dam in southwestern Utah. The contractor's biggest headache on the unique earth and rock-fill dam was getting into and across the steep-walled canyon to build the dam at the same time he was grading 2.3 miles of highway. The rock fill that comprises most of the volume of the dam came from a highway cut south of the south abutment.

The structure is unique because it provides the embankment to carry Interstate Highway 15 across the canyon in addition to creating flood-control and irrigation benefits. This is thought to be the first time an interstate highway project includes a dam. Sponsored jointly by the Utah State Road Commission and the Utah Water and Power Board, the project was built under a \$1,133,000 contract by Morrison-Knudsen Co., Inc., Boise, Idaho.

### "Left-handed job"

Not one part of the project could be finished until the end of the job. The last of the rock excavation had to be hauled back across the dam to complete the grading on the north side. This meant the dam had to be substantially completed first.

At the same time, other grading contracts on both sides were being completed, and the paving contractor was trying to carry the paving through so that a 15-mile section of the new road could be opened to traffic.

To add to the complications, the footing proved unsatisfactory for the spillway bridge as it was originally designed. This structure was redesigned as a 25-foot-square box culvert 140 feet long, but the delay due to the redesign caused the bridge to be the last contract item completed. A temporary detour around the bridge site served both the grading and paving crews.

Another hazard, especially during the early stages, was presented by flash floods that rage through the barren Ash Creek area on their way

(Continued on next page)

Great new things are shaping up in concrete block



For information on bond beam block, illustrated above, see your local concrete block manufacturer.

## Atlas Masonry Cement provides the right mortar

Even standard masonry units such as the bond beam block are being used to create decorative patterns in exposed masonry construction. The effect shown was achieved with this block in two sizes, laid back to back to form a screen-type wall.

Whether standard building block or any of the new-type masonry units are used, ATLAS MASONRY CEMENT provides the right mortar. That's because it produces a smooth, easy-to-work mortar... assures a stronger bond... gives weathertight joints that are uniform in color. And ATLAS MASONRY CEMENT meets ASTM and Federal Specifications. For information on masonry cement, write Universal Atlas, Dept. M, 100 Park Avenue, New York 17, N. Y.



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Most of the rock going into the pervious zones of the dam is obtained from this roadway cut. The Bucyrus-Erie 71-B shovel is loading an Athey PR-21 dump wagon that will make the haul to the dam.



This is how the ground looked before excavation crews went to work. Just getting started was a big job. Access was a big problem; the contractor had to blast a road out of the steep canyon wall at the dam site.



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(Continued from preceding page)

to the Virgin River. Fortunately, no serious flooding occurred.

### Getting access into canyon

The steep walls of the canyon provided no ready access to the dam site. The alternative of following the old highway half a mile upstream and then coming back in the creek bed was uneconomical. The contractor decided to blast out a very steep road down the canyon wall at the dam site.

This narrow haul road, hacked out of the nearly vertical canyon wall, had a 33 per cent grade, but this did not stop the Athey-Caterpillar PR-21 rock wagons that brought in the rock. The clay core material was brought in from an upstream borrow pit by a spread of Cat DW15 scrapers. These rigs did not have to use the steep access road.

### Rock from highway cut

Rock for the bulk of the dam and for a highway fill north of the dam came from a big cut on the south side of the dam. The hard lava rock was interspersed with pockets of cinders and scoria, some of them as large as 50,000 to 60,000 cubic yards.

M-K drilled the rock in 20-foot lifts on a 6-foot gridiron pattern using Ingersoll-Rand Crawl-IR drills. The 3½-inch drill holes were loaded with Western Acrimite, a ready-mixed ammonium-nitrate explosive. The breakage was good, and a large part of the material fell in the 2 to 12-inch size specified for Zone 2 of the dam. Rock larger than 1 foot went into the outer Zone 3.

Two shovels, a Bucyrus-Erie 71-B and a Northwest 80-D, loaded the shot rock into the six Athey PR-21 rockers, a Movall, and one Euclid end-dump.

In the cinder pockets and scoria, the contractor used a Cat D9 tractor pulling a Cat 491 scraper that had been widened and extended to give it a heaped capacity of 45 yards. The scraper's cutting edge was fitted with Esco R5 teeth to improve its cutting ability. A second D9 push-loaded this big rig.

On the embankment, dozers worked out each lift of material as D8 tractors pulled McCoy sheepfoot and

CONTRACTORS AND ENGINEERS



60-ton rubber rollers back and forth for the compaction.

#### Multipurpose structure

The structure includes a 5x7-foot outlet tunnel extending 500 feet through the right abutment with a vertical shaft rising 125 feet to a gatehouse. The tunnel is lined with gunite. This will provide for the release of impounded floodwaters, as well as for the controlled release of the 6,600 acre-feet of irrigation water.

The uncontrolled spillway is a partially lined chute through a draw located north of the north abutment. The spillway bridge carries these flows under the highway.

The dam itself is 700 feet wide at the base, tapering to 103 feet wide at the crest. This width accommodates the four 12-foot traffic lanes, 10-foot outside shoulders, 4-foot inside shoulders, and a 16-foot median. The dam rises to a maximum height of 140 feet above the floor of the canyon.

#### Personnel

Assisting Jones on the M-K staff were excavation superintendent Fred Huff, labor superintendent Harry King, excavation foreman Vernon Lindenmouth, night superintendent Richard Looney, and master mechanic Robert Boyer.

Resident engineer for the Utah State Road Commission was Ben Lee. District engineer of the Cedar City District is Earl A. Johnson. The director of highways is C. Taylor Burton. Jay R. Bingham is director of the Utah Water and Power Board.

THE END

#### Airborne tellurometer tested by Army Engineers

■ An airborne tellurometer, expected to provide a position determination or a distance measurement up to 150 miles, is being tested by the U. S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va. It is an application of ground tellurometer microwave-phase-comparison ranging techniques to aircraft use.

Equipment for the three ground remote stations consists of three identical units, weighing 46½ pounds with accessories, and powered by either 12-volt batteries or a 150-watt 60-cycle generator with a converter unit. Average power required for each station is 75 watts.

Airborne master equipment weighs 500 pounds and is operable from the 28-volt aircraft system with a suitable converter. It requires 2,000 watts of power. Auxiliary radio equipment is used to transfer data to the computing center.

For a position determination, eight men are required—two for each of the ground remote stations and two for the airborne master. For distance measurement, only six men are required since only two ground remote stations are used.

The airborne tellurometer was built for the laboratories by Tellurometer Ltd., Cape Town, South Africa, which also built the original ground tellurometer.



STRUCTURAL STEEL IS SET for the 20-story United Engineering Center at First Avenue and 47th Street in New York City. The \$12 million stainless-steel and glass building, to be completed next year, will house 18 major engineering societies and is financed by voluntary contributions from industrial concerns and individual engineers. Some 3,300 tons of steel will be used in the all-welded frame, fabricated and erected by Dreier Structural Steel Co., Inc., Long Island City, N. Y. The general contractor is Turner Construction Co., and the architect is Shreve, Lamb & Harmon Associates.

## SPECIAL REPORT TO CATERPILLAR OWNERS:



# Converting to Lifetime Lubricated Track Rollers costs less than you think

Lifetime Lubricated Roller Groups, including seals, shafts and end collars, cost only a little more than ordinary Bellows Seal Rollers without end collars. But this small expense of initial installation rapidly disappears through noticeably lower owning and operating costs.

Based on savings from seal replacement alone, Lifetime Lubricated Rollers soon make up the difference. The metal rings of the Floating Ring Seal can be used over and over again. Take a 14-roller D8. At every roller rebuild, you probably have to buy 28 bellows seals @ \$3.97\* each or a total of \$111.16. Compare this with the rubber "O" rings costing a total of only \$45.08\*. You save \$66.08 in seal replacement costs every time you rebuild or replace. Similar savings are available on all models. And, replacement Lifetime Lubricated Roller and shaft assemblies without end collars are priced below those of Cat Bellows Seal Rollers.

But your savings don't end here! Here are other benefits you get from Lifetime Lubricated Track Rollers:

**1. Longer Lived Roller Shells and Component Parts.** The Lifetime Lubricated Roller is much stronger and has more metal in the wear zones, specially hardened for extra resistance to wear. And bushings, bearings and shafts are larger and stronger and will last longer. These components are *always* bathed in *clean*, heat-dissipating oil (not grease). Dirt just can't get in to accelerate wear—oil can't get out, thanks to the patented Floating Ring Seal. This means you won't be buying as many replacement bushings and shafts at rebuild or roller replacement time.

**2. Maintenance Is Eliminated.** Lifetime Lubricated Rollers need no servicing until they're finally rebuilt. You don't have to spend any time nor money for lubrication during the rollers' lives.

**3. Easier Installation.** Snap-on rings hold seals and end collars in place *before* mounting. End collar bolt holes line up easily with track roller frame holes at installation. Your tractors will be on the go much sooner.

See your Caterpillar Dealer. He'll give you the complete facts on the economy of investing in Lifetime Lubricated Rollers... for *all* Caterpillar track-type equipment.

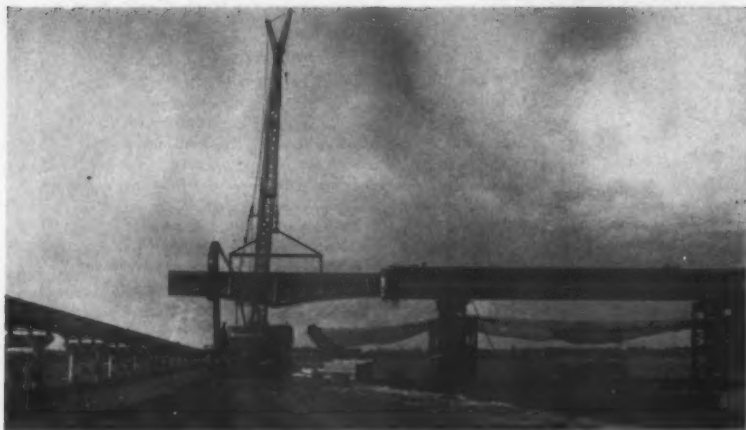
Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.

\*Suggested consumer prices for these Caterpillar parts

### SERVICE TIP:

Lifetime Lubricated Rollers need no servicing. But when rebuild time finally comes, keep metal rings matched in original pairs.

**CATERPILLAR**  
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.



A 70-foot haunched section is being added to a 130-foot parallel flange section assembled on a barge for the Willis Ferry Bridge, joining Texas and Oklahoma. The web and flange plates were welded in the steel yard and the units carried to the barge by a side-boom tractor.

## Jacks raise girders into place from barge

All four girders of the Willis Ferry Bridge, which extends across Lake Texoma to link Oklahoma and Texas, were assembled on a barge in units of 270, 200, or 130 feet, floated into position, and raised up to their final place with four 300-ton jacks.

The 5,425.75-foot bridge, which contains 5,062 tons of structural steel

in the superstructure, has a 28-foot clear roadway and two 3-foot side walks. The four girders are spaced 9 feet 4 inches center to center and are parabolically haunched a distance of 35 feet on each side of the pier. There is a constant-depth section in the positive-moment area. The superstructure consists of four 90-foot continuous I-beam spans, plus one 165-foot, 23 200-foot, and one 130-foot welded-plate girder span. It is designed for H20 loading.

The girders are built up of 18x1 1/4-inch to 18x2-inch flange plates and 90x 1/2-inch to 135x 1/2-inch web plates. Automatic welding was used throughout this assemblage. Vertical stiffeners, 7 inches x 7/16 inch, were used on all interior girders and on the inside of the fascia girders. On the exterior of the fascia girders, horizontal stiffener plates, 6 inches x 3/4 inch, were used for esthetic appearance, to accentuate the lines of the parabolic haunches.

The girders are interconnected by X-frame diaphragms and a lateral bracing system. The lateral system is in the plane of the lower flange between girders 1 and 2 and girders 3 and 4.

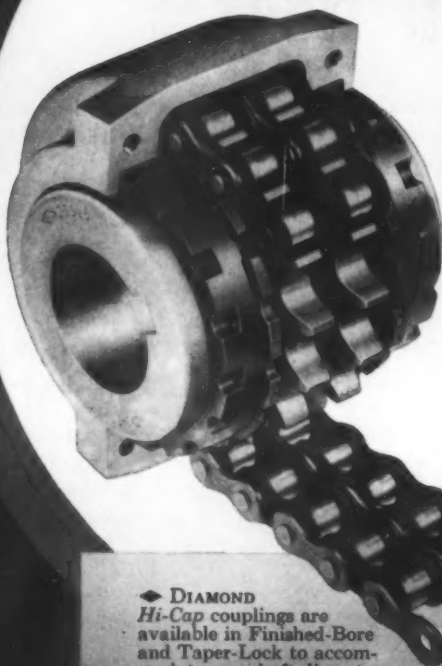
The first girder expansion device, a pin-and-link assembly, occurs at 135 feet within the first plate-girder span which measures 165 feet total. This affords a 35-foot cantilever from the link to the pier. The next link is placed at a distance of 670 feet thereby making the girders continuous over four piers, each spaced at 200 feet, and then cantilevering 35 feet beyond the fourth pier. Within the next 200-foot span, a 130-foot parallel flange section is hung by link assemblies at its ends. This leaves a 35-foot cantilever section from the link to the next pier. The 670-foot continuous and 130-foot hung units are repeated throughout the remaining 200-foot spans and the one additional 165-foot span. The last span, a 130-foot unit, is simply supported.

### Assembling the units

Assembly of the units to be erected began in the steel yard and was completed on the barge. Most of the parallel-section units were shipped to the job site in 25-foot 6-inch, 35-foot 6-inch, and 69-foot lengths. They were then field-welded in the steel yard to make up the 130-foot section between the cantilevered haunched units. The welding of the web was accomplished by a tack weld and two passes on each side. The flange plates, 1 1/4 and 1 1/2 inches, were butt-welded and required four to six passes on each side of the plates. The welding of the flanges proceeded with a down-hand weld on the top of the butted

**NOW**...select  
flexible couplings by SHAFT SIZES

new  
shaft-rated  
**DIAMOND** *hi-Cap* <sup>TM</sup>



**COUPLINGS**  
give you

- lower cost
- bearing and shaft protection
- quick, easy selection and installation

#### \*Hi-Cap means HIGH CAPACITY

All working parts are heat treated steel, and hardened to provide greater resistance to wear, longer service life.

◆ **DIAMOND**  
*Hi-Cap* couplings are available in Finished-Bore and Taper-Lock to accommodate any shaft diameter combination from 1/4" to 6 1/4". New *Hi-Cap* Bulletin No. 1060-C gives construction details, specifications and prices. WRITE TODAY!

**DIAMOND CHAIN COMPANY, INC.**  
A Subsidiary of American Steel Foundries  
Dept. 487, 402 Kentucky Ave., Indianapolis 7, Indiana  
C2200 and Distributors in All Principal Cities

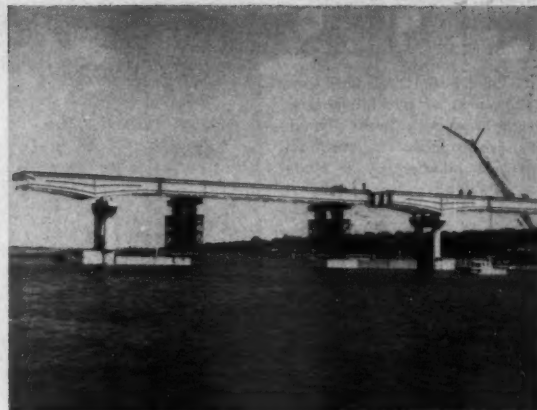
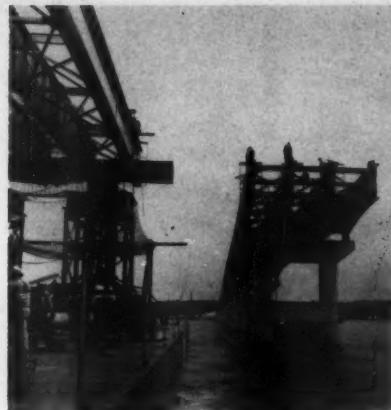
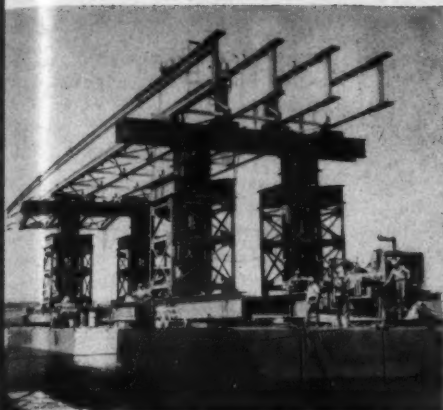


\*The trademark *Hi-Cap* is the property of Diamond Chain Company, Inc.

For more facts, use Request Card at page 18 and circle No. 259



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A 200-foot girder unit is assembled on the barge on four 300-ton hydraulic jacks. It was then floated into position and jacked up to its place on the piers.

The barge moves into position with a 200-foot unit to be erected. Cables at each corner of the barge are tied to clamps around the piers.

Raised to position on the jacks, the girders are field-bolted to the girders already on the piers. Then the other end of the assembly is lowered onto shoes on the next pier.

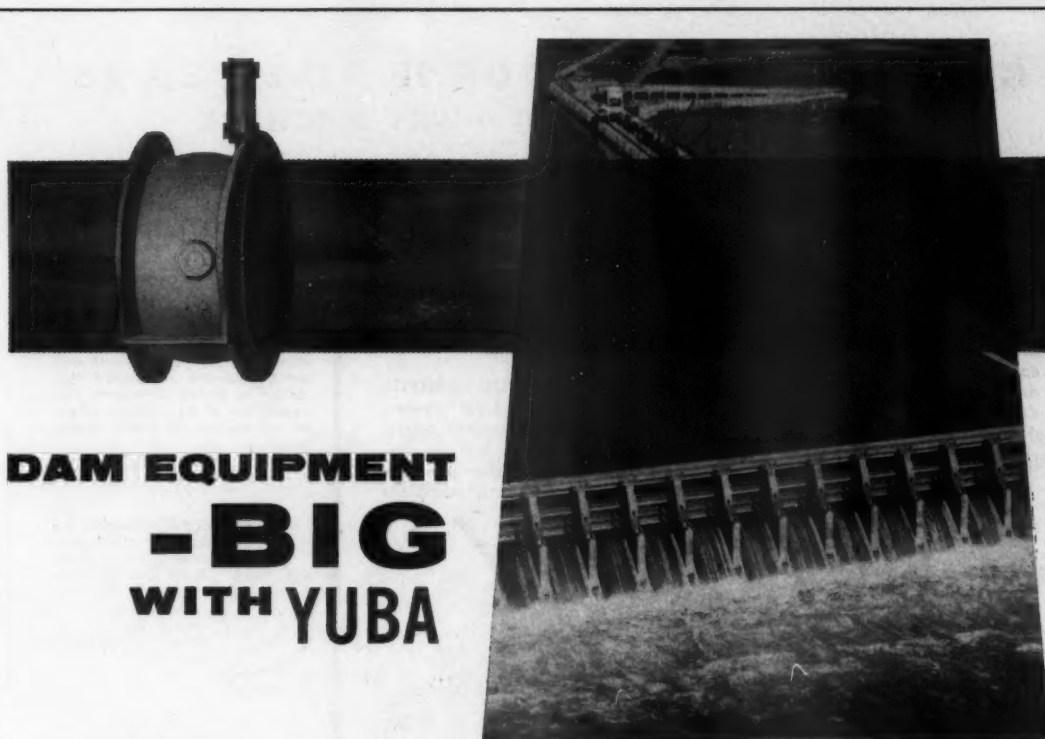
splice and an overhead weld on the bottom half. The welds were all visually inspected and approximately five per cent were radiographed. These welded units and the haunched sections were then carried by a sideboom tractor to the barge for assembly.

The 130-foot parallel flange units were assembled upon the jacks with all diaphragms and lateral bracing temporarily bolted in position. The haunched units were then added to the assembly—on one end to make a 200-foot unit, or on both ends to make a 270-foot unit. The completed assembly was carried by the barge to the position under the bridge from which it was to be erected. The barge was built up of rectangular pontoons pinned together. The four 300-ton jacks, on which the units were assembled, and raised into position, were hydraulically operated and controlled from two panels, one for the two rear units and one for the two forward ones.

A system of cables and two deck engines moved the barge. Forward and reverse movement was controlled by an engine in the center of the barge. It operated cables that were tied to deadmen on the opposite shores. Lateral movement was provided by the rear deck engine and four cables that extended laterally from each corner of the barge. To hold the barge in position at the dock, two of these cables were tied to the dock and two to anchors in the lake. When the barge was moved into position parallel to the bridge, these four cables were tied to clamps placed around the two piers in the erection area. Operation of the rear engine then pulled the barge into position between the piers.

After an assembly was raised into position, the girders were field-bolted to the girders on the piers. All flange and web splice plates were attached to the assembly before positioning of the barge. This required a sandwiching of the flanges and web of the girders already on the piers, between the splice plates of the assembly on the barge. The operation required extremely accurate positioning of the barge laterally, as well as close control of the vertical positioning by the jacks. Once the bolted splice was

(Continued on next page, col. 4)

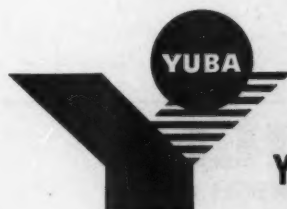


## DAM EQUIPMENT - BIG WITH YUBA

**From forebay to tailrace—Yuba takes the complete responsibility—through design, fabrication and erection of steel equipment in hydro, flood control and water supply projects.**

*Call on Yuba for bridge and gantry cranes, hoists, intake, spillway and draft tube gates, bulkheads, trashracks and rakes, penstocks and liners, valves, structural steel, rebar, and other engineered steelwork.*

Whether it's a single giant butterfly valve or the complete job responsibility, Yuba is equipped to work with contractors from design to erection of the fabricated steelwork required—everything from forebay to tailrace. When Yuba handles the complete package responsibility, both the contractor and the user are relieved of the problems of coordinating production, delivery and installation. Decades of experience, know-how of skilled personnel, and large, fully-equipped production facilities, are your assurances that specifications and schedules will be met, however complex the job, whatever the job location. Ask for Bulletin No. HY-51, describing equipment and services, or ask for a sales engineer to call.



*specialists in hydroelectric steelwork*

**YUBA MANUFACTURING DIVISION • Benicia, Calif.  
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**YUBA CONSOLIDATED INDUSTRIES, INC.**

Sales Offices in Atlanta • Buffalo • Chicago • Cleveland • Houston • Los Angeles • New York • Philadelphia • Pittsburgh • San Francisco • Seattle  
For more facts, use Request Card at page 18 and circle No. 260

THE JOB OF LOADING OUT some 1,400 yards of backfill material for the Plymouth Street elementary grade school in Waltham, Mass., is handled by a Model H-50 Payloader tractor shovel. The rig, which can load 36 trucks of 9-cubic-yard capacity in three hours, has an operating capacity of 5,000 pounds. The owner, W. J. Donlan Contracting Co., Waltham, has the subcontract to supply sand and gravel backfill for the new school, scheduled to open in September.



## GREENVILLE RIPPER FOR IH TD-15, 20, 25 TURN TRACTOR INTO 4-WAY MACHINE

... rip ... bulldoze ... tow ... pushload without changing tools

**RIP AT ANY DEPTH** ... Pitch and depth control adjustments permit ripping at any depth. From basic settings, operator can adjust hydraulically as required. Settings can be made in seconds. Hydraulic system holds points at desired depth. Shank design and pitch control keep points at best ripping angle.

**LIVE SWIVEL ACTION** ... Shanks smoothly swivel 15° in either direction on heavy pins — seek out weak spots in rock. It gives points a live action that shatters rock with a jack-hammer action. Shanks follow tractor like a trailer.

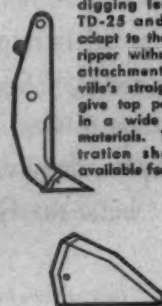
**FINGER-TIP HYDRAULIC CONTROL** ... Finger-tip control of the "power-matched" hydraulic system exerts Goliath-like power which distributes the weight of the tractor on ripping points for fast, complete penetration.



**BOOSTER RIPPING** ... A push block, straddling the center shank and swing beam can be attached very quickly by pinned connections. This permits use of the combined efforts of two tractors for added ripping power.

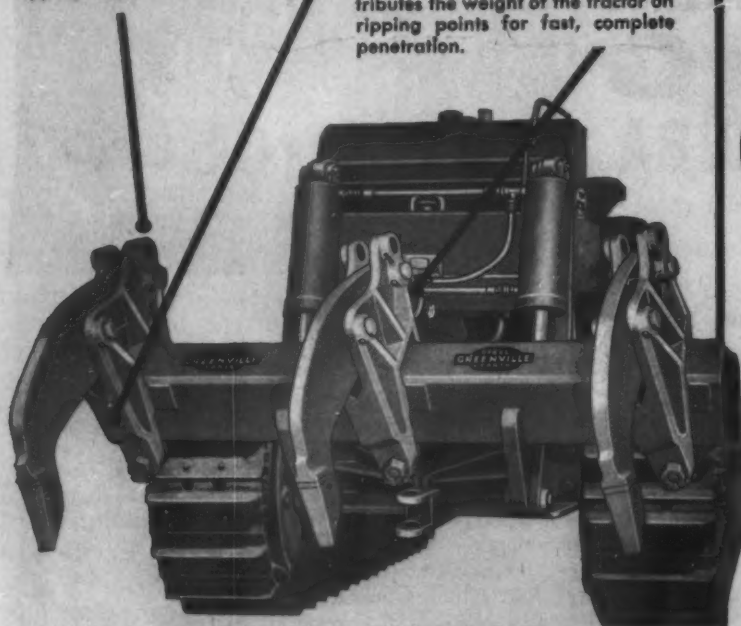


**CURVED SHANKS** are available in 24" maximum digging depth for TD-20 and 25. These shanks give their best performance in materials that are not blocky or slabby in formation.



**STRAIGHT SHANKS** are available in 24", 42" and 48" maximum digging lengths for TD-25 and all will adapt to the standard ripper without special attachments. Greenville's straight shanks give top performance in a wide range of materials. 15" penetration shanks are available for TD-15.

**REPLACEABLE POINTS** ... For use with curved and straight shanks.



THE GREENVILLE TRAILING SWING BRACKETS work separately, each pivoting about a heavy pin to seek out weak spots in rock. The ripper weight balances dozer, resulting in greater traction and more usable horsepower.

Tractor	Max. Ripping Depth W/Std. Shanks	Ground Clearance		Overall Width Tool Beam	Tool Beam Cross Sect.	Pump Data (Rear PTO)	Cyl. Dimensions		Pist. Rod Diam.
		24" Shank	18" Shank				Bore	Stroke	
TD-25	24"	31"	—	108"	11" x 12 1/2"	60 gpm @ 1000 psi	8"	15 1/2"	3"
TD-20	24"	24"	—	102"	10" x 12"	44 gpm @ 1000 psi	6"	15"	2 1/4"
TD-15	18"	—	12"	90"	8" x 8"	37 gpm @ 1000 psi	5"	15"	2"

STEEL  
**GREENVILLE**  
CAR CO.

BATHING

EQUIPMENT

**GREENVILLE**  
STEEL CAR COMPANY

Greenville, Pennsylvania

For more facts, use Request Card at page 16 and circle No. 261

(Continued from preceding page)

completed, the other end of the assembly was lowered onto the shoes on the pier.

### Building the substructure

The substructure is made up of 24 piers and 2 abutments, supported by 12BP74 steel bearing pile driven to practical refusal. A total of 1,110 tons of steel was used in this phase of construction. The piers, containing 6,800 cubic yards of concrete and 367 tons of reinforcing steel, vary from 35 to 95 feet high.

The bases of the pier shafts are bell-bottomed, and the piles project into the bases approximately 1 foot. Below each base is a 5 to 7-foot seal cap of concrete encasing the piles, the thickness being dependent upon the water depth and the resultant pressure. The finished grade of the cap is at approximately the grade line of the lake bottom.

Close control of the pile driving was necessary. Since the H bearing piles were to project 1 foot above the seal cap, the periphery piles have only about 1-foot 6-inch clearance from their tops to the sloping portion of the bell-bottomed form. This, then, required a depth determination of pile refusal within an accuracy of 2 feet.

Upon completion of the pile driving, an assembly of three types of steel forms was positioned on the bottom of the lake. The lower form was for the seal cap and was 3/16-inch plate. This form was permanent. The next unit was for the bell-bottomed portion of the pier shaft, and the third section was for the shaft up to the pier cross beam just above the water line. The last two units were specially constructed for this project by the Dixie Form & Steel Co., San Antonio, Texas. These watertight forms were of the split type and were hydraulically operated for removal after concrete placement.

The seal cap was poured under water, and the forms were then dewatered in order that this lower portion of the pier might be poured in the dry. The remaining portion of the pier was formed by standard Blaw-Knox units.

The bridge links Oklahoma 99 and Texas 901. It replaces a bridge that was flooded in 1945 by the Denison Dam project. A contract for \$3,731,579.03 was let by the Tulsa District of the U. S. Army Corps of Engineers to a joint venture of the John F. Beasley Construction Co., Dallas, Texas, which devised the method of erection for the superstructure, and the Massman Construction Co., Kansas City, Mo., which handled the substructure. The Mosher Steel Co., Houston and Dallas, Texas, fabricated the structural steel in the superstructure. The design and plans for the bridge were prepared by the Oklahoma State Highway Department under the contract with the Corps of Engineers.

THE END

A meeting for world unification of drafting practices was held in Lisbon, sponsored by the International Organization for Standardization.

CONTRACTORS AND ENGINEERS



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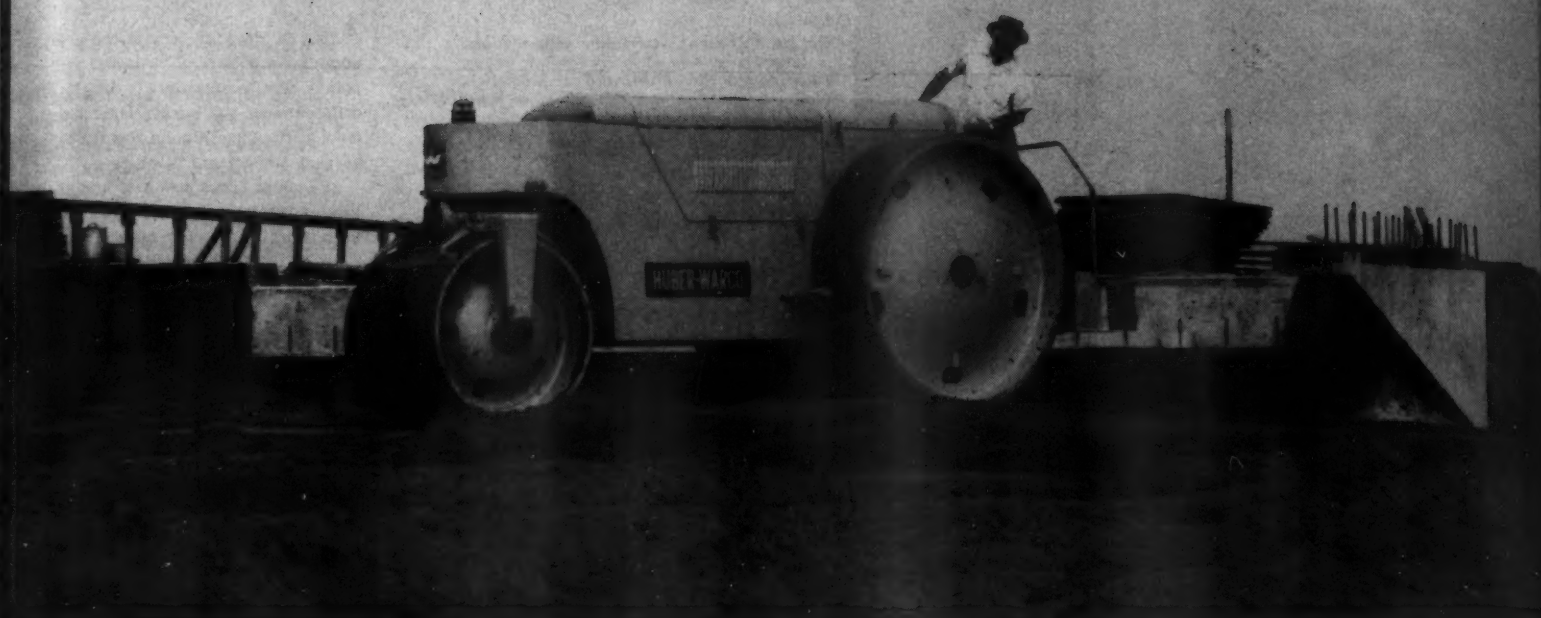
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WILMINGTON, DELAWARE — James Julian, general contractor, recently used one of his Huber-Warco 3-wheel rollers to compact base material on Limestone Road, one of the company's projects near Wilmington. The firm owns eight other Huber-Warco rollers.



# HUBER-WARCO

## 3 wheel rollers

SIZES FROM 10 to 14 TON

Huber-Warco 3-wheel rollers are made in General Purpose, Finishing, and Variable Weight models to fit every 3-wheel roller need.

**TORQUE CONVERTER** tailshaft governor and two speed transmission are standard. Doubles available power, cuts fuel costs, increases life of machine components one-third to one-half.

**SPECIAL SUB FRAME** suspended at three points carries engine and transmission assembly

and cushions outside shocks to increase machinery life.

**GUIDE ROLL** assembly has tapered roller bearings and is completely adjustable. Retains factory new adjustment indefinitely. Kingpin housing is removable.

**OTHER FEATURES** include replaceable tire design, differential lock, variable speed hydraulic steering, pressure sprinkling system, choice of gasoline or diesel engines.

*A trusted product name backed by respected distributor names from coast to coast*



MOTOR GRADERS

Standard transmission models from 83 to 160 H.P.  
Torque converter and power shift transmission models from 102 to 195 H.P.



TANDEM ROLLERS

3-5 Ton • 4-6 Ton  
Retractable • 5-8  
Ton • 8-10 Ton •  
8-12 Ton • 10-14 Ton



3-WHEEL ROLLERS

10-Ton • 12-Ton •  
14-Ton Standard Weight  
10-12 Ton • 12-14 Ton  
Variable Weight



MAINTAINER

M-52 — 45½ H.P.  
Attachments are Lift-Loader,  
Broom, Bulldozer,  
Patch Roller, Scarifier,  
Snow Plow, Berm Leveler

**HUBER-WARCO COMPANY**

**Marion, Ohio, U.S.A.**

For more facts, use Request Card at page 18 and circle No. 262



The tenth of the 11 cofferdam cells required to close the outside of the cofferdam for the Puget Sound Naval Shipyard at Bremerton, Wash., is under construction. Other cells are being filled with sand and gravel delivered by barge. The dry dock will be 180 feet wide, 1,152.5 feet from head end to gate.

## A huge cofferdam w

After 21 days of around-the-clock pumping, a battery of wells and well-points finally unwatered the huge cofferdam for the world's largest dry dock at the Puget Sound Naval Shipyard at Bremerton, Wash.

As soon as crews got their first real look at the big excavation they have been working on for more than a

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## MILE-HIGH CALIFORNIA ROAD JOB

# NEW TRACTORS REALLY PR



Unwatering of the big cofferdam is practically completed at this point. A series of 66 wells and 400 well-points, requiring a total of 1,107 horsepower, was needed for 21 days of round-the-clock pumping to handle the unwatering. Access and haul roads have been constructed, running from yard grade into the excavation.



At the dry-dock site, a barge is unloaded by hydraulic monitors that wash the material over the side. At right is a Stang monitor powered by a twin GM 6-71 diesel engine.



A Maniotowoc 3900 is used to clam material from a barge and place it behind a sheet-pile cutoff wall near the shore end of one of the moles forming the sides of the big cofferdam.



Packs it in—two D8H Tractors, pulling and pushing, fill a 491 Scow with hard-to-load breccia, a cemented gravel, in 45 seconds.

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year, preparations were started for grading and forming. Crews expected to place the first concrete by early summer. The \$21,645,000 contract for the construction of the dry dock is scheduled for completion by the end of 1961.

The work is being done for the Thirteenth Naval District by a joint

venture of Manson Construction & Engineering Co., Seattle; J. A. Jones Construction Co., Charlotte, N. C.; Perini Corp., Framingham, Mass.; and Osberg Construction Co., Seattle. The structure was jointly designed by Moran, Proctor, Mueser & Rutledge, New York City, and Carey & Kramer of Seattle.

Excavating the site, placing 1.3 million cubic yards of sand and gravel backfill, building and then unwatering the cofferdam have been the major phases of the work to date.

Dredges first removed nearly 600,000 cubic yards of material from the bottom of Puget Sound to deepen the existing waterway and remove unstable foundation material. More than half of this dredging was done by the hydraulic dredge Husky. The remainder was clammed out by derrick barges and hauled away in scows.

The Husky is powered by a 12-cylinder 900-hp GM diesel engine directly connected to the main dredge

pump. A diesel-electric generator supplies power for all other operations. Working with a 100-foot ladder, the dredge was able to get her 6-foot basket cutter down more than 80 feet. She pivoted on 120-foot reinforced-steel pipe spuds. The 16-inch discharge line was extended as far as 7,000 feet to dump the material into deep water. No booster was used, even at this extended distance.

Several derrick barges clammed the remainder of the material into bottom-dump and flat-deck scows that were towed to deep water and unloaded. While this excavation was being completed, the backfill operation got under way.

## Conveyor loads barges

The major portion of the 1.3 million cubic yards of sand and gravel backfill came from a hilltop pit at Port Orchard, across an arm of the sound from the shipyard. The Sound Sand & Gravel Co. set up a conveyor system to transport the material about half a mile down the hillside to a dock and load it onto barges. Supplementing the Port Orchard fill was 100,000 cubic yards of material supplied by barge from the Pioneer Sand & Gravel Co. borrow pit at Stellacoom, Wash.

In the Port Orchard hilltop pit, a Cat D9 tractor-dozers pushed the material to a trap where a 48-inch x 13-foot belt feeder carried a steady, measured flow to the 36-inch belt conveyor. Four spans of conveyors carried the sand and gravel down the hill, across a busy highway, and out a long pier to the deep-water loading dock. These conveyors were made up of Stephens-Adamson idlers and a B. F. Goodrich belt.

Two of the flights terminated in surge piles built over recovery tunnels; Syntron feeders in the tunnels loaded the belt of the next flight. These surge piles kept the operation running smoothly in spite of interruptions at either end. When there was no barge being loaded at the dock, the material still flowed from the pit into one of the surge piles. If there was a breakdown or other delay at the pit, the surge piles kept a steady flow of material to the loading dock.

Two flat-deck steel barges, each

# RSCRAPER TEAMS PRODUCE

## "A GOOD COMBINATION FOR THE ROUGHEST WORK"

KE boulders, volcanic ash and mud—mix well with composed shale—then add mile-high working altitudes, side-hill operation and unfavorable weather... these are some of the problems facing A. Tiechert and Inc. as they push a new highway through the Sierra Nevada Mountains in Eastern California. The job, 7.8 miles of freeway construction on State Highway 40, involves moving two million yards of earth in two five-month seasons. In spite of the obstacles, the Sacramento contractor holds the work to schedule, expects complete the job on time this October.

Four D8 Series H Tractor-491 Scraper teams, pushed by D8s of the same series, set the pace for this difficult job. Because of the steep hill haul roads, they cut the cuts and fills, then handle earthmoving on hauls up to 700 feet. DW21 wheel units take over on longer hauls that range up to 7000 feet.

"The 491 Scrapers with D8s front and rear performed very well—especially in wet, rocky ground," says W. W. Staring, Project Manager. And he adds, "Operators and foremen especially like the 491 in the back because of higher apron clearance, excellent ground clearance and the good distance from axle to front. In most cases we used D8-491 teams instead of shovels on shot breccia. It's a good combination for the roughest work."

On rugged big volume, short haul operations like these, Caterpillar track-type Tractor-Scraper combinations are the most efficient way to move earth. The new D8 Series H, for example, is over two tons heavier than the previous model, packs 23% more horsepower (235 wheel HP), and with direct drive has a speed of 18 MPH forward. Team it with the 491 Scraper



The finished product—traffic moves with speed and safety over a newly completed section of California State Highway 40.

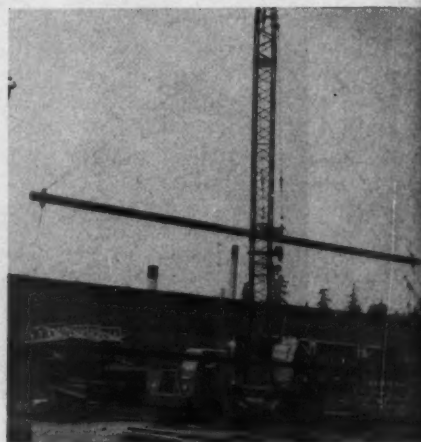
(34 cu. yd. heaped, 27 cu. yd. struck) or the 463 Scraper (28 cu. yd. heaped, 22 cu. yd. struck) for big capacity loads.

Get all the facts—plus a profit-proving demonstration—on the new Caterpillar D8H Tractor and the 491 Scraper from your Caterpillar Dealer. He's ready right now!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

# CATERPILLAR

BORN OF RESEARCH  
PROVED IN THE FIELD



Using a long spreader, an American truck crane moves a 100-foot sheet pile from a welding rack to the barge that will take it to the driving crew.

For more facts, use Request Card at page 16 and circle No. 263



Most of the backfill for the dry dock was obtained from this hilltop pit located across the sound from the shipyard, background. A conveyor system brings the material about a half mile down the hill and across a highway to the loading dock. Barges bring the backfill to the job site.



In the pit, a D9 feeds a 48-inch belt that, in turn, feeds a 36-inch travelling belt that runs to the dock. The few rocks and roots are picked out by hand.



A series of four belt spans lead to the dock. Surge piles are over recovery tunnel; Syntrol feeders in the tunnels load the belt. It rides a trestle over a road and out onto the dock.

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with a capacity of 800 cubic yards of sand and gravel, and one dump barge of 650-cubic-yard capacity, transported most of the material. The remainder was hauled by a 450-yard steel barge and smaller wooden barges. Three tugboats shuttled the barges back and forth and also moved the other floating equipment on the job.

#### Monitors unload sand and gravel

About 500,000 yards of the sand and gravel forms a blanket over the glacial till under the dock bottom. The remainder, 800,000 yards, forms the moles along the two sides of the dry-dock area. A large part of this material was unloaded from the barges by hydraulic monitors that simply washed the sand and gravel off of the flat steel decks. In building the moles, some of the material had to be placed behind the cutoff walls by clamshell buckets.

Three monitors speeded the unloading. Two of these were self-contained units mounted on small scows. One consisted of a Stang monitor mounted on a raised platform with a big Aurora pump powered by a twin GM diesel 6-71 engine below; the other is similar. The third monitor was mounted atop the wheelhouse of the tugboat Crane and was powered by the Cat 353 engine that also drives the Crane's 61.5-inch propeller. The powerful streams of water from the monitors washed the material off the barges in less time than they were loaded by the conveyor.

#### Requires huge cofferdam

The finished dry dock will measure 180 feet wide, 1,152.5 feet from head end to gate, and 61 feet deep from the tops of the moles to the floor of the dock. The cofferdam necessarily includes a much greater area.

The two long sides of the cofferdam consist of cutoff walls of ZP-27 sheet piling—3,051 tons of it. Most of these sheets were 90 to 99 feet long. The outer end is a series of 11 interconnected sheet-pile cells, each 60 feet in diameter. These cells took 2,450 tons of 28-pounds-per-square-foot flat sheets, all 53 to 100 feet long. In addition, the head-end cutoff wall took 180 tons of sheets, and the

CONTRACTORS AND ENGINEERS

## What's it costing you

## to reline brakes?

Want to save the \$1,000 or more brake jobs can cost you in a year? TORQMATIC DRIVE owners will tell you it's automatic with the built-in retarder, which also provides the added safety of another braking system.

For this optional TORQMATIC DRIVE feature saves service brakes for everything but full stops. Naturally linings last far longer... downgrade runs are safer.

TORQMATIC owners also report saving up to \$2,000 every time they train a new driver... eliminating one engine overhaul out of three... wiping out engine-disconnect clutch costs.

**Pays for itself in savings alone**  
Sure you'll pay more for TORQMATIC — but you quickly get your money back in repair savings. And TORQMATIC also speeds job cycles—there's no need to slow down for shifts.

More and more operators are riding themselves of their clashbox-caused expenses by switching to TORQMATIC. It's been proved on years of tough jobs. Details? See your dealer or write Allison.

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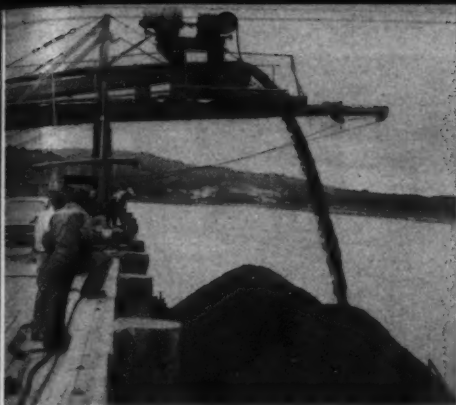
**TORQMATIC®  
DRIVES**

THE MODERN DRIVE FOR  
MODERN EQUIPMENT



For more facts, use Request Card at page 18 and circle No. 264





Barges are loaded uniformly, since a variable-speed belt drive is used to place material at any desired distance from the dock. The barge is pulled along by an air-powered winch. Each barge carries 800 cubic yards.

pump-well cofferdam required another 208 tons.

Sand and gravel was placed on both sides of the cutoff walls to form the moles. The sheet-pile cutoff walls are braced by two sets of 14 x 14 timber wales supported on pairs of timber piles every 20 feet. One pile of each pair is vertical and the other is battered. Every 100 feet, a 5-pile dolphin was added for increased rigidity.

The timber-pile supports and the sheet piles were driven by Manson's steam-powered scow driver No. 5 with a Vulcan 50-C steam hammer.

The long limber sheets for the outer cells were a bit hard to handle. In a fabrication yard on shore, 60 and 40-foot lengths were welded together to provide the required 100-foot sections. American truck cranes with long pipe strongbacks carried the piles out on a dock and loaded them on barges.

Out in the water, Manson's derrick barge No. 2, a 25-ton Clyde diesel-electric rig, had been fitted with 150 feet of boom and a 20-foot jib. This rig picked the long piles off the barge and threaded them together around the cell template. The scow driver No. 5 did the driving.

These cells were clammed full of sand and gravel. When they had all been completed, and the moles were built up above water, they formed an access road completely around the dry-dock area.

#### Unwatering the cofferdam

To unwater the huge area inside the cofferdam, American Dewatering Corp., New York City, installed a series of wells and wellpoint systems that included 66 wells and some 400 wellpoints. Some idea of the pumping load can be gained by the electric-motor horsepower requirements. The 66 wells required a total of 732 horsepower, while the wellpoint systems added 375 more for a total of 1,107 horsepower.

Working around the clock for 21 days, these pumps pumped an estimated 209 million gallons of water to dry up the area. Some of them will continue pumping to hold down the infiltration and keep the area dry.

In the succeeding phases, the con-

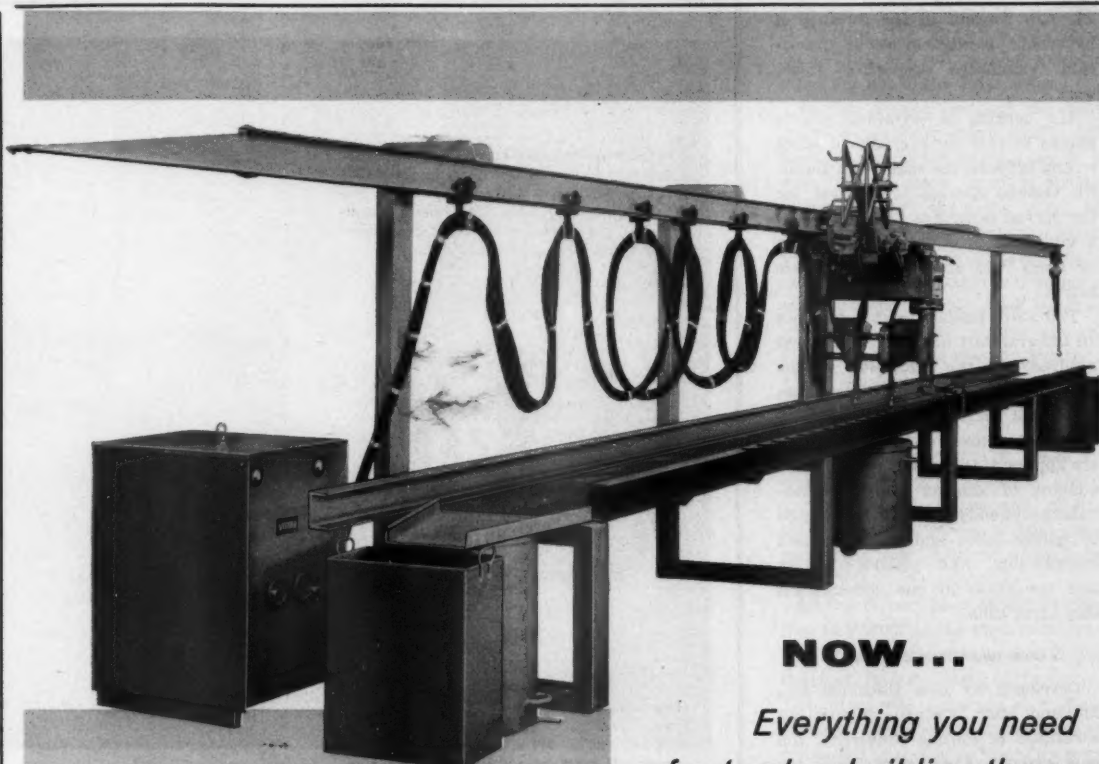
tractor will place 160,000 cubic yards of concrete and 9,300 tons of reinforcing steel in the 7-foot-thick floor and in the walls of the structure. Some time next year, when the structure is completed, the cells of the outer face of the cofferdam will be removed. The side cutoff walls remain as permanent supports for the moles. The aggregate for the concrete is being supplied by Pioneer Sand & Gravel Co. from Steilacoom.

#### Personnel

The field staff for the Manson, Jones, Perini, and Osberg joint venture is headed by project manager Walter P. Petersen and includes office

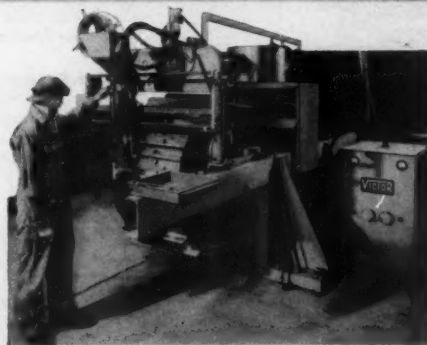
manager Le Roy Reynolds, purchasing agent William Booth, chief engineer Clyde Sherman, and general superintendent Arnold Malley. Other superintendents are: Paul Amundson on pile driving, Dick Cain on excavation, and John Dieu on the concrete. George Henley and his son George, Jr., operators of the Sound Sand & Gravel Co., supervised the gravel-pit and loading operations.

For the Thirteenth Naval District, Capt. S. P. Zola is officer in charge of construction. Capt. P. M. Boothe is resident officer in charge of construction on the project. His assistants are Cmdr. R. W. Smith and Lt. Thomas Tate. **THE END**



#### VICTOR AUTOMATIC TRACK LINK REBUILDER

adjusts easily to all track links. Dual wire feed automatically hardfacing links on both sides of track simultaneously. Modular design enables you to lengthen rebuilder, so operator controls welding on one set of tracks, while assistant is preparing second set. Your choice of Model TLM-2 (shown) or build-it-yourself Model TLM-A. Roller and idler rebuilding attachment available as accessory.



#### VICTOR GROUSER BAR WELDER,

the first completely automatic machine for this work, cuts grouser rebuilding time in half—and does a more uniform job, too. It's self-loading, handles all size tracks without disassembly. Machine automatically trims grouser bar and holds it in precurved position that prevents bowing after welding.

## NOW...

*Everything you need  
for track rebuilding thru one  
source...your Victor dealer*

That's right — you now can get from your Victor dealer everything you need — rebuilding machines, hardfacing wire, service and parts — for rebuilding tractor rollers, idlers, links, grousers, etc. Here's what this package, backed by Victor, includes:

Complete line of machines for build-up, hardening, and finishing tracks to like-new condition. (Two only shown here.) These machines are built by internationally known L&B Welding Equipment, Inc., a wholly-owned Victor subsidiary.

Victor's own VA4X and VA5X continuous-coil, hardfacing wires, developed especially for use with automatic rebuilders. Coil uniformity guaranteed.

Overnight shipment of parts and prompt repair service by factory experts. Help on shop layout, installation, operator training and rebuilding counsel.

See for yourself how buying from one source does away with buck passing from supplier to supplier... and eliminates shopping around. Call your Victor dealer for complete details, or write us for descriptive literature.

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# VICTOR

for hardfacing

For more facts, use Request Card at page 18 and circle No. 265

**Plastic decking  
gripped by wires  
used to**

## Cut falsework for H-P shells

A new concept in the forming of hyperbolic paraboloid shells practically eliminates supporting falsework.

The decking of Styrofoam plastic planks is held by a cradle of wires strung between the edge beam forms. No vertical shoring is required for the curved surface of the shell. Only a minimum of support is necessary to carry the forms for the edge beams.

The foam plastic decking becomes an integral part of the shell. Bonded naturally to the underside of the concrete, it serves as both insulation and vapor barrier.

The advantages of the new system are apparent. By greatly reducing the amount of shoring and by eliminating plywood decking, it is expected to reduce labor and material costs considerably. And placing decking and insulation in one construction step saves time.

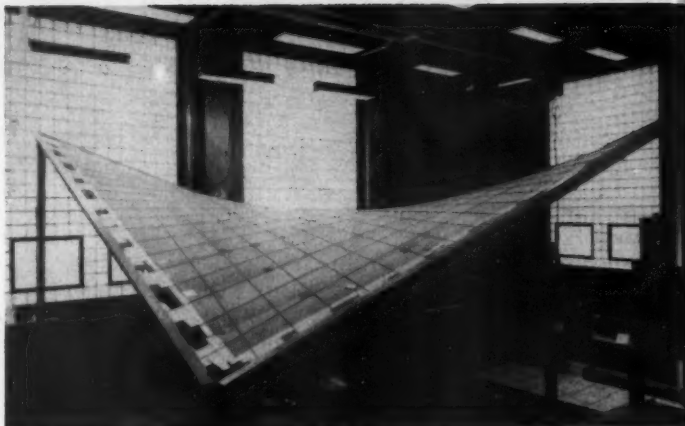
### Over two years of research

Developed by Dow Chemical Co., Midland, Mich., with the engineering assistance of Purdue University, the new system has been under study for over two years. In the structural laboratory at Purdue, a 20x20-foot H-P model has been built and successfully tested. Dr. Joseph L. Waling, leader of the research team at the university, has built a cover for a patio adjoining his home using the unique system. This summer, a contractor will use the "wire and plastic" method to build a star-shaped H-P canopy for a filling station in Midland.

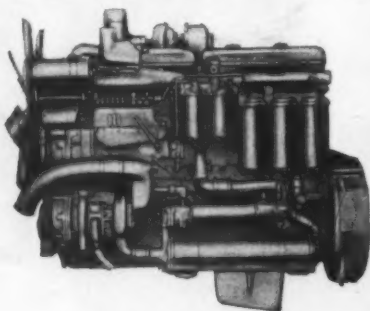


Earl E. Ziegler, left, Dow engineer in charge of fabricated plastics development, and Dr. Joseph L. Waling, professor of structural engineering at Purdue University, discuss construction of the small wire and plastic H-P model.

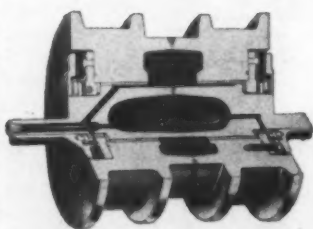
This 20x20-foot model of a hyperbolic paraboloid form, built in the structural laboratory at Purdue University, has a decking of Styrofoam plastic planks held by a cradle of wires strung between the edge beam forms. A minimum of support is needed for the form. The upper lattice presses down on the 3-inch planks of Styrofoam; the lower lattice exerts upward force. Light-colored wedges of dense Styrofoam press against interior planks.



Three new International TD-25's of contractor V. E. Posey's fleet team up preparing home sites from a mountainside...near San Diego, California. One "25" operator comments: "The power is there, but big engine 'sound and fury' are just about gone!"



Big power "plus" of the new TD-25 is the new direct-start, 6-cylinder turbocharged International DT-817 diesel engine. Tri-metal crankshaft bearings; valve rotators; dry-type air cleaner; externally-mounted, gear-driven oil and water pumps—all are typical DT-817 long-life, high-output features!



## How you get full-load with

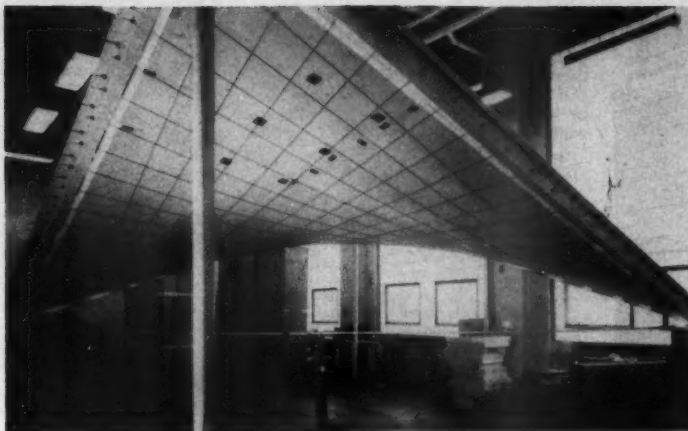
Thick-shelled International Dura-Rollers have king-sized lube reservoirs, positive sealing, and exclusive relief-passage protection from over-lubrication. These minimum maintenance track rollers give you practical 1,000-hour lubrication intervals!

Keep full loads on the move full time with exclusive Planet Power steering. Full power on both tracks, full time, is the answer! And Hi-Low on-the-go power-shifting lets you match power to condition, instantly, keep loads "on the move"—and increase speed where practical! This "25" belongs to Berke Moore Co., Inc., Boston expressway contractor!





Ends of wires are held by small round steel grips, right, similar to those that hold prestressed cables. Wires are on 1-foot centers and are skewed relative to the edge beams. Metal H and Z clips align the edges.



(Continued from preceding page)

The forming method is based on the use of a comparative newcomer to the field of building materials—Styrofoam. Manufactured by Dow Chemical Co., this expanded polystyrene is lightweight, moisture-resistant, and has good insulative properties.

#### Principle of forming

In the conventional forming of an H-P shell, builders are guided by the principle that lines parallel to the outer edges are straight lines. These straight lines form the basis for the laying out of the purlin and joist support of the plywood decking.

In the "wire and plastic" method of forming, the wires are run on a skew. They are run parallel to each other but not to the outer edges.

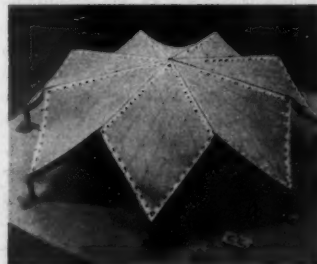
In this skewed position, the wire traces a parabolic curve which, for slight curves, is the natural sag of a wire. Thus, a series of wires, strung correctly across the outer edges of an H-P frame, will outline the exact shape of the curved surface. Wires skewed in one direction will be concave upward (sagging) and capable of holding up the plastic planks. Wires skewed in the opposite direction will be concave downward (humped) and capable of holding down the plastic planks.

The planks are held in place by two networks of wires—one above and one below. Wires and plastic planks both serve as a thin-shell membrane with sufficient strength to support the fresh concrete.

In the construction of the 20×20-foot H-P shell at the Purdue laboratory, a steel frame was built to fit the shape of the outer edges of the figure. The frame was supported at its four corners, with the two lower corners connected by a steel tie bar. Two rows of holes—for upper and lower latticeworks of wire—were drilled in the steel frame at 12-inch centers.

The lower network of wires, skewed about 3 feet between opposing edges, was set in first. The wires crossed each other to form a checkerboard pattern. Each wire was adjusted, according to mathematical calculation, to a length that would give the proper sag. The end of each wire was held by a vise grip similar to those used to hold prestressed cable.

With the lower latticework of wire in place, 3-inch-thick planks of Styrofoam were set on top of the wire. Planks were held together by pres-



The new concept can be used in striking shapes. This table model has a shell composed of several truncated and skewed hyperbolic paraboloids.

For more facts, use Request Card at page 16 and circle No. 266

## Full-load turns...full-speed cycles with proved TD-25 standard equipment!

With standard equipment at no extra cost, the new 40-hp TD-25 gives you the International® proved control combination that has been outproducing king-sized clutch-steered crawlers for years!

You get combined Planet Power-steering and Hi-Lo on-the-go, power-shifting exclusively in the new International TD-25. And you get this basic, built-in design advantage in your choice of torque-converter or synchromesh model!

With this and all its other big advantages, the TD-25 can outearn other big rigs up to 50%—on pushing, bulldozing, or pulling big drawbar tools such as a shale-shattering ripper!

No "dead-track drag" or "gear-shift lag"!

Planet Power-steering gives you full-time "live" power and traction on both tracks, to make full-load turns—without eliminating load-limiting "dead-track drag." And Hi-Lo on-the-go power-shifting instantly matches power to conditions to end load-losing "gear-shift lag." Hi-Lo power-shifting makes the TD-25 the industry's only king-sized 4-speed torque-converter crawler, and the only one with load-matching efficiency-range control. In the synchromesh transmission "25," the Hi-Lo planetary system gives eight speeds forward and

reverse. Either model gives you cycle-speeding, up-or-down, on-the-go power-shifting with "finger-tip" ease!

Power-shift and power-steer the new "25" with king-size loads—around curves, upgrade, anywhere. Prove what it means to command full-time, full-load ability to outearn clutch-steered king-sized crawlers, up to 50%—and with standard control equipment! Compare simplified TD-25 design—the only planetary system engineered and located to give you "live track" power steering and on-the-go, up-or-down power shifting! See your International Construction Equipment Distributor for a demonstration!



**International  
Construction  
Equipment**

International Harvester Co.,  
180 North Michigan Ave., Chicago 1, Illinois  
A COMPLETE POWER PACKAGE



◀ The 20×20-foot shell, loaded to 19.2 psf—the equivalent of about 1½ inches of concrete—showed a deflection at the center of 2.7 inches. This was reduced to less than ½ inch by coating the Styrofoam surface with a thin skin of mortar.

Dr. Waling, who directed construction of the model at Purdue, used the method to build this double H-P shell at his home. The job, while winning no prize for speed, was ably handled with the help of fellow researchers and students. ▶



sure applied from the edges by means of plastic wedges. The 2-foot-wide planks were aligned to each other by H-clips and Z-clips.

After the blanket of plastic planks had been placed, the upper network of wires was strung. Since these wires were skewed in a direction opposite to the lower wires, they pushed downward on the planks.

No actual concrete was placed on the model, but various uniform loadings were applied by means of common brick. Under loadings of 19.2 psf (the equivalent of about 1½ inches of concrete) the maximum deflection of the shell was 2.7 inches. This figure was found to be excessive, and a thin coat (about ¼ inch) of mortar was troweled onto the plastic surface. The skin of mortar stiffened the structure considerably. Under the 19.2 psf loading, the maximum deflection was thus reduced from 2.7 inches to less than ½ inch.

#### Ph.D. crew builds patio cover

Dr. Waling, who directed the construction of the model, had sufficient confidence in the results of the tests to build a double H-P shell to cover a patio adjoining his house. With the help of students and fellow researchers, he put up the 13×26-foot shell using the wire and plastic method. Although the Ph.D. crew made no claims to high-speed construction, they were able to turn out a nice-looking shell.

Essentially, the same method of construction was used for the patio cover as was used for the laboratory shell. The finished shell of the patio cover contains 2½ inches of Styrofoam topped with a 1-inch layer of concrete reinforced with wire mesh. The concrete was waterproofed with an Addex roof made by the Lubrizol Corp. The lower latticework of wire was removed and a double coat of plaster applied to the Styrofoam.

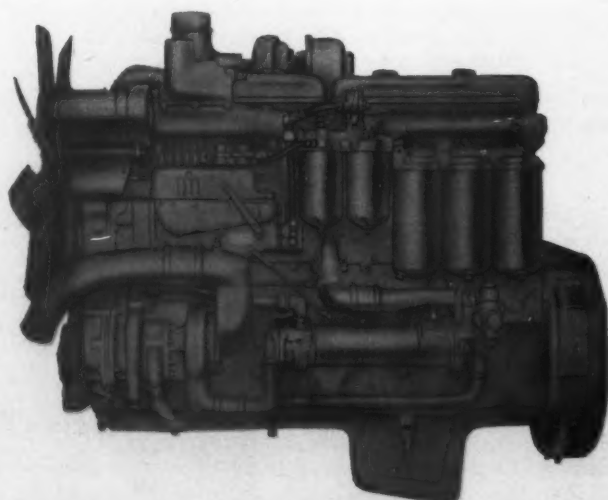
Says Dr. Waling, "We make no claims to being experts in construction. We have only developed an idea. It is up to the building industry to perfect it—to adapt it to its needs."

Paul Harsha, Dow Chemical Co., Midland, Mich., is distributing information on the method to interested contractors. Earl E. Ziegler, Dow engineer in charge of fabricated plastics development, is optimistic about the many applications of the new concept. He says, "The technique is believed feasible for roofs of many sizes and shapes—from homes to great stadiums." THE END

## How **BRAWN-BACKED** Payscraper features give you stepped up...loading

From power plant to push-block, the 34-cu. yd. International 295 Payscraper gives you an exclusive combination of features that step up dirt-on-fill delivery! Compare quiet, big-capacity DT-817 Payscraper power. Try the advantage of up or down, on-the-go, Payscraper power-shifting that provides load-speeding *automatic* direct-drive lock-ups in second, third, and fourth gears! Measure *extra value* features like safe, effortless power-steering—that leaves "the steering feel in the steering wheel." Note how exclusive torque-cushioning planetary drive axles add dependability to rough-and-tumble earthmoving! See how 122-inch bowl width speeds loading and unloading—adds control ease and stability, loaded or empty. Prove on your job that bonus performance "rides" the Payscraper bowl. Choose the 2-axle "295"; or 3-axle, 34-cu. yd. "495." See your International Construction Equipment Distributor for a demonstration.

**Payscraper power-to-payload punch** tops all other rubber-tired rigs—because the fast-slugging, high-torque International DT-817 diesel is the Payscraper power plant! The 375-hp, turbocharged DT-817 gives you direct, push-button starting; all-altitude high-efficiency performance; power for top rim-pull to help speed all steps of the cycle; time-saving "no-lag" control power!



## ...roading

## ...dirt-on-fill capacity!



**SLIDE PREVENTION** on a road near Delaware Water Gap, Pa., is handled by the removal of 50,000 yards of material with water from the Delaware River. Peter W. Kero, Carlstadt, N. J., has a gasoline-powered No. 2 Moretrench Jet-Well pump deliver river water to a Moretrench No. 3 jet pump 50 feet up the slope. Water shot at 800 gpm loosens 50-ton boulders, small rock, and soil to make the roadway safe.



Even "dead" sand comes alive and "boils" fast into the Payscraper bowl. Every detail of Payscraper design aims at speeding the cycle, and staying available! The 21-inch diameter steel cross tube provides super load-bearing strength and resistance to impact. Bowl "backbone" draft arms and side reinforcing members all are massive high-strength box-section steel weldments. "X"-member reinforcing maintains perfect push-frame alignment at all times. And the 4-speed, planetary-type, torque-converter power-shift transmission automatically adjusts torque and load to speed -- to maintain full capacity!



You steer the 140,000-lb. loaded Payscraper almost as easily as a 3,600-lb. automobile! Payscraper gives the big control advantages of (1) exclusive International rack-and-pinion plus tandem pump steering system; and (2) 3-degree forward spindle pitch that improves scraper balance and prevents "nose down" in high-speed turns. The 16-adjustment, bump-smothering seat builds operator confidence, too. And reach-easy power brakes, "control tower" vision, and flush deck safety help him deliver full Payscraper capacity, and take advantage of speeds up to 33.5 mph. He commands ample power and traction to pull directly out of 90-degree turns, even on soft fill!



The fast, positive-acting Payscraper ejector mechanism is powered by the International PTO-driven Cable Control Unit. One cable drum of this simple planetary system actuates the apron and ejector; the other drum positions the bowl to control spreading action. Apron lifts to a big 94-inch opening. Two ejector-plate pushing members apply dozer-like action to force out the whole 34-cu. yd. load cleanly. Action of six heavy-duty springs, stretched during ejection, positively powers the ejection mechanism's return!

Here's your 76-page cost and production estimating book--newest, most authentic and complete guide for estimating material-moving costs--and for selecting equipment combinations for top profits, anywhere! Yours for the asking from your International Construction Equipment Distributor!

International Harvester Co.,  
180 N. Michigan Ave.,  
Chicago 1, Illinois  
A Complete Power Package



**International  
Construction  
Equipment**

## Bay State Abrasive buys Felker company

■ Bay State Abrasive Products Co., Westboro, Mass., has acquired the Felker Mfg. Co., Torrance, Calif. Bay State vice president Elden L. Auker will direct the operations of Felker as a wholly owned subsidiary. Felker's manufacturing manager, Lester F. Kusmick, and sales manager, Fred K. Ryan, will be retained in their posts.

The purchase gives the Massachusetts grinding-wheel firm a desired West Coast facility. Felker manufactures diamond abrasive cutting wheels.

## New director for Joy

■ Robert E. Kinter, former assistant director of advertising and sales promotion for Joy Mfg. Co., Pittsburgh, has been promoted to director, following the retirement of Roy E. Campbell. Kinter will be responsible for administration of services to the machinery company's Coal Machinery, Mining and Construction, and Industrial divisions, and will provide staff advice to the advertising departments of the Baash-Ross, Electrical Products, and Western Precipitation divisions.

## G.E. names manager for communications marketing

■ General Electric Co.'s Communications Products Department, Lynchburg, Va., has made G. R. Petersen its new manager of marketing. Petersen will direct all activities involved in the marketing of G.E.'s 2-way radio, microwave, power-line, carrier-current, and advanced military communication fields.

## Davey names manager

■ The Davey Compressor Co., Kent, Ohio, has named Robert H. Burgan, Jr., mid-Atlantic regional manager. He will direct sales and service for the entire Davey line of air compressors, mobile machine shops, field service units, air tools, and rotary drills.

From Baltimore headquarters, Burgan will cover Maryland, Virginia, Delaware, southeastern Pennsylvania, and southern New Jersey. His duties also include liaison work with federal purchasing and engineering offices.

## Clark Bros. names two to sales posts

■ The new manager of the San Francisco branch office of Clark Bros. Co., Olean, N. Y., one of the Dresser Industries, is James H. Bews. He will be responsible for the sale of Clark engines, compressors, and gas turbines in the San Francisco and Pacific Northwest areas. Previously, he served the company as technical service engineer, application engineer, and, since 1957, as sales engineer in the Los Angeles district office.

Hugh R. Lafferty is replacing Bews in the Los Angeles post. He was formerly application engineer there.

For more facts, use Request Card at page 18 and circle No. 267

## Labor Review

### Carpenters Union president guilty of contempt; given six months

President Maurice A. Hutcheson of the Carpenters Union was sentenced to six months in jail and a fine of \$500 for refusing to answer questions put to him by the McClellan Committee.

Federal Judge James W. Morris, who imposed sentence, found Hutcheson guilty of contempt of Congress for failing to respond to 18 questions put to him by the committee. The questions dealt with the use of union funds in an alleged attempt to avoid

prosecution in an Indiana land fraud case. Hutcheson and two other officers of the union are under indictment in Marion County (Indianapolis), Indiana. The questions put to him by the committee related to activities in Lake County (Gary, Hammond) while a grand jury was pondering whether to hand up an indictment.

Hutcheson contended that the 18 questions dealt with purely personal matters not within the McClellan Committee's reach, or that they might aid in prosecution of the criminal case against him in Indiana.

### New Jersey teamsters put 56-cent price tag on 3-year pacts

Four New Jersey teamster locals put a 56-cents-an-hour price tag on their new 3-year agreements with the ready-mixed concrete industry. At the same time, the union moves toward a uniform, single driver rate. A similar settlement was recently completed for heavy and highway drivers in New Jersey.

The package, according to an official of Newark Teamsters' Local 408, gave straight truck drivers in Newark a 15-cents-an-hour wage increase as of May 1, 1960, establishing a \$3 hourly rate. Wages go up another 15 cents in 1961, and a final time in 1962. At the same time, contractors agreed to put 7 cents per man per hour into

a pension fund, and to add \$8 a month to the present \$20.80 a month health-welfare contribution. An extra day will be added to maximum vacation time, the union says, bringing the total to 15 days. The drivers already were getting 11 paid holidays, the union adds. And a picket-line clause allows the drivers to refuse to cross a picket line to the limit of the law.

The 3-year agreement covering ready-mix drivers represented by Jersey City Local 641 also is worth 56 cents an hour, the union estimates. The old agreement called for two classifications, established at \$2.76 and \$2.91 an hour. Drivers who had been making \$2.76 an hour will get a 15-cent raise each year for three years; drivers who had been earning \$2.91 an hour will receive 10 cents more an hour each year. The increases will mean a single rate of \$3.21 in the third year of the contract.

A single rate of \$3.21 an hour also will be established by 1962 for concrete drivers represented by Hoboken Teamsters' Local 560.

### Kansas City work tied up by strikes as 17,000 stay out

Work in the Kansas City area remained tied up while a number of unions and two employer associations tried to renegotiate contracts that ran out April 1. At issue were union demands for welfare programs, pensions, subcontractor clauses, agency shop arrangements for work in Kansas (a right-to-work state), and other nonwage items.

Struck were the Builders Association of Kansas City and the Heavy Constructors Association. Seventeen thousand workers were idle.

### Rhode Island teamsters sign 4-year agreement for 37-cent increase

The Associated General Contractors' Rhode Island Chapter nailed down another 4-year agreement as teamsters accepted a total 37-cent wage increase, plus establishment of a health-welfare fund with an 8-cent employer contribution beginning this year.

Hourly pay increases are 5 cents, May 8, 1960; 12 cents, May 7, 1961; 10 cents, May 6, 1962; and 10 cents, May 5, 1963. The agreement expires May 2, 1964. Hourly rates, including the first increase, are now \$2.65 on 2-axle equipment, and \$2.73 on 3-axle with trailer.

### Five crafts settle in Twin Cities area, but carpenters strike

Nearly 9,000 carpenters went on strike May 23 against the Associated General Contractors in the Minneapolis-St. Paul area for higher pay raises than have been accepted by five other crafts. An AGC spokesman reports that the walkout affected both residential construction and heavy and highway projects.

The AGC raised its offer to carpenters to 15, 17, and 10 cents, but the Twin City Carpenters District Council demanded a 50-cent package in 20-20-10 installments, AGC says.

# 1

Blend many operations into smooth flowing cycles with fast, two-lever "Joy-Stick" air-ease controls.

# 2

Work non-stop with "Shear-Ball" turntable connection. Requires no adjustment, less maintenance than other designs.

# 3

Set four "Power-Set"® outriggers in about a minute. Move up and reset even faster.

# 4

Operate faster with a square-tubular-chord boom that provides greater lifting capacities, longer reaches.

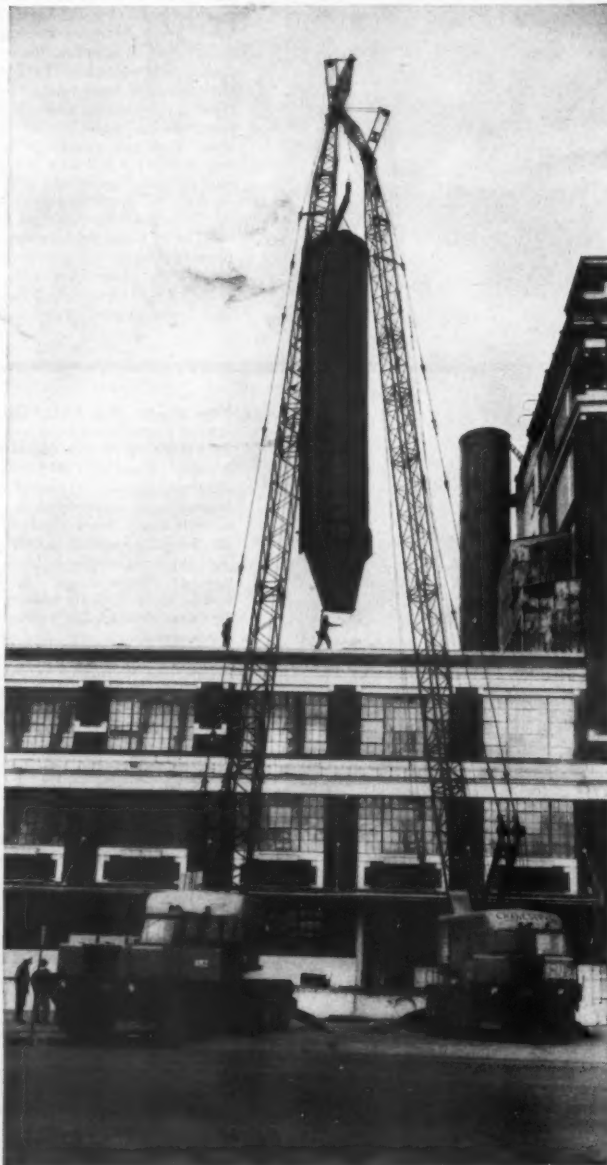
## 4 WAYS FASTER WITH LORAIN ON YOUR JOB

Lorains are real output boosters. They're designed to speed your operations . . . and ruggedly built to stay with your toughest jobs. Their reliability is field-proven. "Shear-Ball" connection for instance is warranted for 10 years.

Lorains convert so easily that field changes are a breeze. Beyond that, Lorains have the operating flexibility to pay off whether you use them as hard-digging shovels, hoes . . . fast-moving draglines, clamshells or cranes.

See your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO



Moto-Cranes lift 15,000-lb. flour storage bins at a 68-ft. radius. Crane Service, Inc. teams two MC-530W's to lift six 57-ft. bins to the roof of General Mills, Sperry-Division plant in Spokane. The 35-ton Moto-Cranes are equipped with 120-ft. booms and 20-ft. jibs. Both are working on "Power-Set"® outriggers.

# LORAIN. ON THE MOVE

**PLANTS:** In Lorain, Elyria and Bucyrus, Ohio . . . **PRODUCTS:** Power shovels, cranes, draglines, clamshells, and hoes on crawlers from 3/4- to 2 1/2-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6000-lb. and 7000-lb. carrying capacity . . . **OUTLETS:** Lorain products sold and serviced by 249 distributor outlets throughout the world.

For more facts, use Request Card at page 18 and circle No. 268



## Transportation research under way at White Motors

■ A research study is being undertaken by the White Motor Co., Cleveland, Ohio, to anticipate future transportation needs and guide its long-range product development program. Advances made in all types of transportation will be studied and correlated with population, business, and industrial trends.

The director of advanced product research, in charge of the program, is William F. LeFevre. He was previously manager of research with Fruehauf Trailer Co.

## Armco plant modernized

■ The Hamilton, Ohio, plant of Armco Steel Corp., Middletown, Ohio, is undergoing a modernization and rebuilding program, slated to cost more than \$6 million. Work on the plant, which serves the steel-making facilities of the Middletown Works, is scheduled for completion early in 1961.

## American Cyanamid names director, plant manager

■ L. V. Clark has been appointed director of explosives research and development for American Cyanamid Co., New York, N. Y. He will make his headquarters at the company's explosives plant in New Castle, Pa., and will direct all explosives research and development projects being carried out there, as well as at the Cyanamid research center at Bound Brook, N. J., and at other locations. Until this appointment, he had been manager of the New Castle plant for 13 years.

Named to succeed Clark as manager of the New Castle plant is John J. Brosky. He joined the company in 1947 and, since 1958, has been manager of the Grafton, Ill., plant.

## Allis-Chalmers assigns sales representatives

■ Allis-Chalmers Industries Group, Milwaukee, Wis., has appointed two sales representatives in the Pacific region. Thomas P. DeMund was sent to the San Francisco district and Max W. Jacobs to the Los Angeles district.

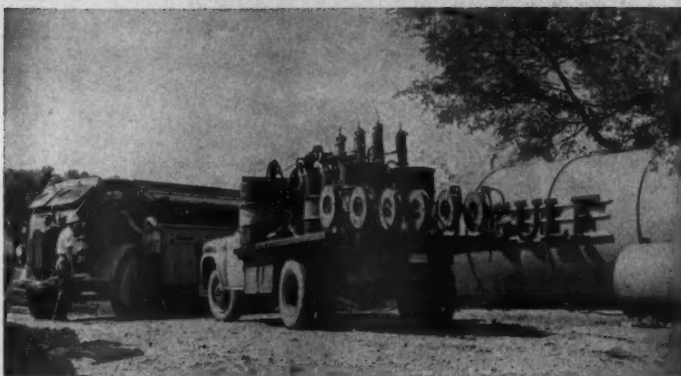
In the St. Louis district, William A. Rapp and Byron K. Smay were appointed sales representatives. All four men recently completed the company's training course for graduate engineers.

## Bruning names manager for drafting materials

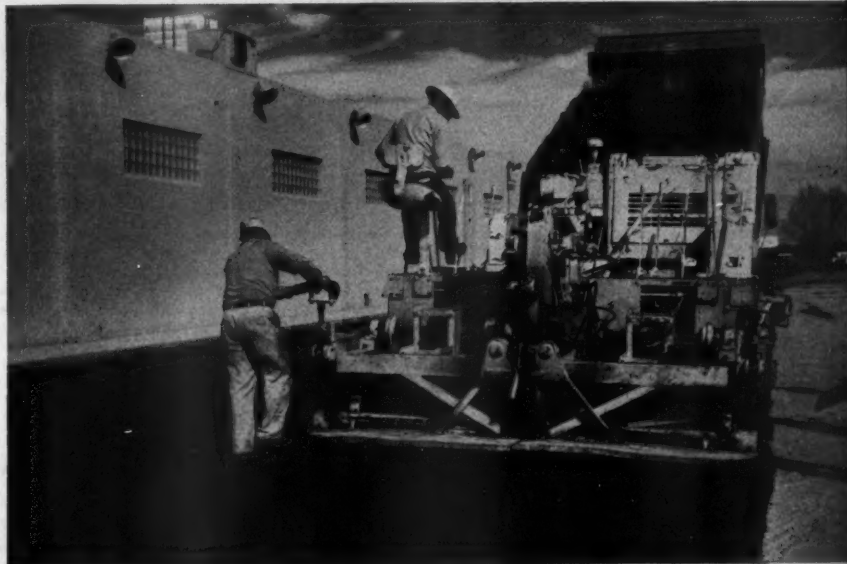
■ The Charles Bruning Co., Inc., Mount Prospect, Ill., has promoted Robert I. Ray to product manager for drafting equipment and materials. Previously, he was a Bruning sales representative in the Chicago area.

Ray's work includes the procurement and promotion of the 2,200 items of drafting equipment distributed by the company, among which are tracing media, drafting tools, etc.

TO ENSURE A FAST, SMOOTH OPERATION, Gulf Oil Corp. worked out a lubrication program and delivery schedule with the maintenance superintendent on construction of the canal and lock for Barkley Dam near Paducah, Ky. Only three Gulf lubricants are needed to meet the grease and oil requirements of most of the \$2 million worth of equipment used on the job.



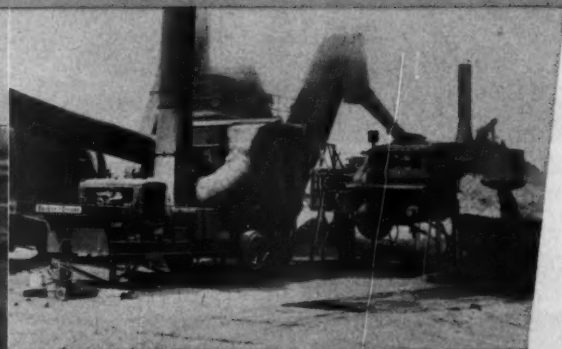
Arizona Paving & Contractors, Inc. laid 2,000 tons of asphalt in less than two days for the parking area of a Phoenix Supermarket. This Barber-Greene finisher, powered by an International UD-282 diesel engine, transforms hot-mix into smooth pavement at the rate of 200 tons per hour.



## Why it's wise to specify INTERNATIONAL POWER for road building equipment



Olivens Construction Co. uses International diesel power to lay a 6-inch base coat for U. S. Interstate Highway between Tucson and Phoenix, Arizona. The Woods Roadmixer adds water to one part cement and 4½ parts sand, which is bladed and compacted immediately.



San Ore Construction Co. Inc. of McPherson, Kansas relies on two International diesel engines for asphalt production. Company President Clare Miller says, "We depend on International diesels to provide steady, economical power for this continuous mix plant." San Ore has produced over a million tons of mix for Kansas roads.

From parking lots to super highways, contractors everywhere are discovering that the most efficient surfacing equipment is powered by International. When selecting power for your machines, check into the complete line of International engines—35 carbureted and diesel models from 16.8 to 385 max. hp. Contact your International Engine Distributor or Dealer soon, and find out how little it costs to power—or repower—your equipment with International.

# INTERNATIONAL<sup>®</sup> ENGINES

International Harvester Co.,  
190 North Michigan Ave., Chicago 1, Ill.  
A COMPLETE POWER PACKAGE

For more facts, use Request Card at page 18 and circle No. 269



Double-jointing of 40-foot joints into 80-foot lengths in portable field shops cuts field welding for spreads on a 335-mile section of the Transwestern pipeline in Arizona. The Price-O-Matic welder, and the method developed by contractor H. C. Price Co., Bartlesville, Okla., automatically welds joints faster and cheaper than field welding. An internal clamp holds the pipe as a Lincoln welder makes the exterior weld.



After the outside weld is made, the pipe passes to this station where welder and workman ride this gantry into the 30-inch pipe to make the inside weld. The welder is a Lincoln L3 automatic unit, using 1/8-inch welding wire and Lincoln 781 flux—the same as is used for the outside weld. A fan removes fumes and keeps air fresh inside the pipe during the operation.

## Double-jointing adds speed to pipeline project

by RALPH MONSON, field editor

Welding pairs of 40-foot-long joints of 30-inch pipe together into 80-foot-long double joints accounts in part for the rapid progress being made in laying a pipeline for Transwestern Pipeline Co. across Arizona. Automatic welding machines in a portable shop make inside and outside welds quickly and economically, cutting the number of field welds in half.

The 335-mile section of the pipeline extending across Arizona is being built by two spreads of H. C. Price Co., Bartlesville, Okla. Spread No. 1 started near Window Rock and is heading west. Spread No. 2 started near Needles on the California border and will work east until the two meet.

Speeding the work through the sections of heavy rock trenchings are

huge tractor-rippers and quad drills that punch out four blast holes at a time. The drills are powered by 1,200-cfm portable compressors.

Welding crews gain efficiency through the use of tractor-mounted double welding generators powered from the tractor engines. Each of these rigs is the equivalent of four ordinary welding generators. Yet each is self-contained and moves under its own power.

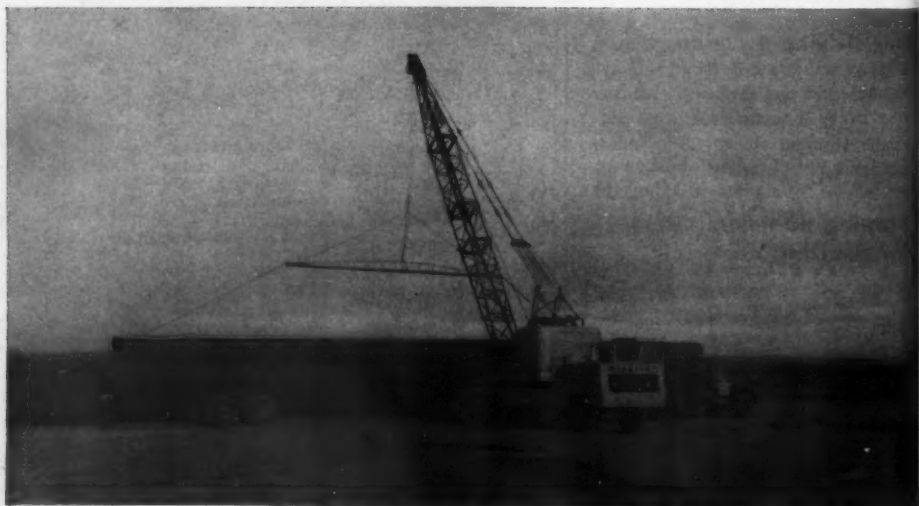
Although these spreads are laying many miles of pipe at high speeds and under difficult conditions, their safety record is outstanding. The record of 886 days and 888,257 man-hours worked without a lost-time accident was accomplished by the workmen and supervisors of Spread No. 1

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A workman in this shelter operates the hydraulic internal clamp, rotates pipe being welded, and sends sections on their way when welds are completed. The shop makes an average of 12 to 15 double joints per hour. More than 2 miles of pipe is turned out in a 10-hour day.



Stockpiled 80-foot lengths of pipe are loaded by a Michigan T24 crane onto a Nabors pipe trailer pulled by an International 210 truck. The 80-foot double joints, weighing an average of 5 tons, are picked up by the crane with a 30-foot spreader on its load lines.

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by rigid adherence to a thorough and well administered safety program.

#### Transwestern pipeline

Transwestern Pipeline Co., Houston, Texas, is building the 1,800-mile pipeline to deliver natural gas from the fields of west Texas and the Texas Panhandle to the Arizona-California border. Here, the gas will be picked up by Pacific Lighting Gas Supply Co., Los Angeles, in a 34-inch line that is also under construction. The gas will be distributed in southern California by Southern California Gas Co. and Southern Counties Gas Co.

Transwestern has split the \$192 million project into a number of sections, with H. C. Price Co., Lub-

bock, Texas, and Houston Contracting Co., Houston, being the prime contractors. There is a total of seven working on the project.

The Price spreads are fighting their way across the mountains, deserts, and timberland of northern Arizona in a region of many extremes. Elevations range from near sea level at the Colorado River to above 7,000 feet near Flagstaff. While much of the area is desert, it is noted for severe snowstorms and devastating cloud-bursts. Temperatures range from searing 100-plus-degree summer days to near-zero winter nights. Both Price spreads operated in much the same manner and with similar equipment.

(Continued on next page)



The stringing operation was done by subcontractor Dunn Bros., Inc., Dallas. An 80-foot section delivered along the right-of-way by the Nabors trailer and International 210 is set alongside the trench by a Cat MD7 pipelayer tractor with Superior pipe clamp.



The second trencher, a Buckeye Model 48, walks around to better digging after pulling out of a rocky section of trench.



A CRC Kelly ripper, on a D9 that straddles the trench, slashes through rock in a section that has been started by the trenchers.



Drilling crews move in where rock is too deep and hard for the rippers. This Gardner-Denver double drill handled by a Cat D7 side-boom tractor tackles a rocky section of trench.

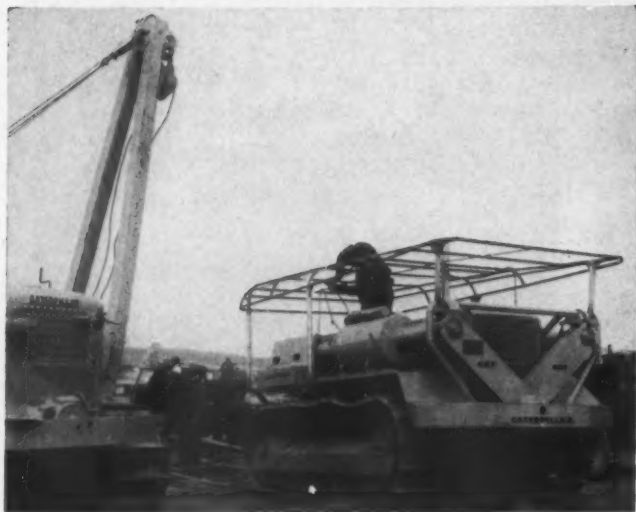


Backhoes bring up the rear of the trenching spread. This Lima 3/4-yard rig follows the ripping and drilling and blasting operations to bring the trench to grade.

(Additional photo on front cover)

by an  
crane

ENGINEER



Price's No. 1 spread was in the huge Navajo Indian Reservation, nearly a third of the way across the state. The relatively few public roads and the great distances from railheads required the right-of-way crews to do a better job than usual on road building. Long hauls for the stringing crew and difficult access for all crews

Welding crews use these new Cat tractors equipped with two Lincoln double welding generators that are driven from the tractor engine through the front power take-off by V-belt drives. A pipe canopy is being built over the tractor and generators to protect the equipment and operator from the weather.

(Continued from preceding page)

were the rule across much of the state.

#### 80-foot-long double joints

The heart of the double-jointing system is the Price-O-Matic welding method developed by H. C. Price Co. and first used successfully in 1957. Basically, the system makes automatic welds inside and outside of the pipe and makes them faster and more economically than field welds can be made.

On this job, the 40-foot joints of pipe were delivered by rail and stockpiled at a few convenient sites across the state. At these points, the double-jointing crew set up its portable shop. While this setup includes a considerable array of equipment, it is so arranged that the entire shop can be taken down and loaded on trucks in about two hours and reset at a new location in about four hours. Two big flat-bed American trailers, pulled by Autocar trucks, and a smaller trailer, pulled by a Chevrolet truck, haul the complete layout, except for the two tractors that handle the pipe.

In the welding operation, a power grinder first removes the beveled ends of the pipe to be joined, leaving the ends square and true. A Cat D7 pipe-layer tractor then sets the pipe on a rack that feeds sections by gravity to the welding crew.

The pipe is held to proper spacing and true alignment by an internal hydraulic clamp as the outside weld is made. A Lincoln L3 automatic welder makes this weld using 1/8-inch Lincoln L60 wire and 781 flux. The pipe rotates in the carriage as the two beads of the weld are laid. The welding head remains stationary at the top.

As soon as the outer weld is completed, the clamp is released, and the pipe rolls to a second station where the inside weld is made.

Price developed the special equipment for making this inside weld. A long boom or gantry, riding on rails and powered by an electric drill motor, carries the welding equipment and the operator in and out of the pipe for each weld. Inside, the operator positions the Lincoln automatic welding machine on the joint and then rotates the pipe as the weld is made. The gantry remains horizontal as the pipe rotates. An exhaust fan removes the fumes and excess flux and supplies fresh air to the operator.

With the joint completed, the gantry retracts, bringing out the operator and the equipment. The pipe rolls to the next station for an X-ray of the joint. An Allis-Chalmers HD-16 side-boom tractor picks the double joints off the rack and stockpiles them. Power for the completely electrified operation is supplied by a Cat 326 generator set.

Under ordinary working conditions, this field shop completes 12 to 15 double joints per hour. Under pressure they have done as many as 18. Working 10 hours per day, they turn out more than 2 miles of pipe.

Faced with lots of hard rock dig-

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One sure way to cut costs on your next steel-sheet piling job is to use Foster's Piling Rental Plan. You get savings *plus* the assurance of all the piling you need, when you need it!

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Ask for the exact sections, the exact lengths the job requires. All you pay is one low fixed rental rate. No more hazardous and costly driving with substitute "make do" sections; no more tying up cash in big piling inventories.

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GINEERS

ging, the trench crew got under way as soon as the right-of-way was ready. A pair of husky trenchers, a Buckeye Model 48 and a Cleveland Model 320, led the trenching spread. They took everything they could get, including all the loose material and some rock ripped by a Cat D9 tractor equipped with a big CRC Kelly ripper.

Drilling and blasting crews followed to loosen rock the ripper could not get. To speed the drilling, this crew used two sets of Gardner-Denver quad drills, each powered by a LeRoi 1,200-cfm compressor. The 4-unit drill was carried from the boom of an Allis-Chalmers side-boom tractor that also towed the compressor.

Another high-speed drill used on this spread was a Damco Rotary Blastholer powered by an Ingersoll-Rand compressor. The holes were loaded with Du Pont 40 per cent dynamite and fired with caps and fuses.

After the blasting, the trench was completed by a spread of backhoes that included one Lorain, one Insley, and several Limas.

Stringing was done by a subcontractor, Dunn Bros., Inc., Dallas. The 80-foot pipes, which weigh about 5 tons, were loaded from stockpile with a Michigan T24 motor crane. International Model 210 trucks with Nabors pipe trailers did the hauling. A Cat MD7 side-boom tractor picked the pipe off the trucks and placed it along the trench.

#### Multiple welding generators

The bending crew used a Cinch portable bender cradling the pipe with a D7 side-boom tractor. This crew used two tractors to save the time of coupling and uncoupling for moves.

The pipe crew used D7 and D8 side-boom tractors to handle the pipe, and a Crose internal pipe clamp to hold the pipes in alignment. This crew and the welding crew that followed used the special Taylor welding tractors. Each of these rigs consists of a D7 tractor with a Lincoln double generator mounted on either side of the tractor frame alongside the engine. Belt drives from the front power takeoff drive the generators. Each of these rigs is the equivalent of four 300-amp welding generators. The pipe crew used one of these rigs, and the welding gang had four.

The coating and wrapping crew used a Crose cleaning and priming machine and a Crose coating and wrapping rig to apply the hot dope and the wrappings of felt and kraft paper or Fiberglas.

#### Safety program

Price spreads put heavy emphasis on their safety program, and the results justify it. Last year, the five Price spreads took six of the 14 awards made for safety at the Pipeliners Annual Convention. The big accumulation of days and man-hours without lost-time accidents is further proof of the programs' success.

The company's safety program is supervised by a safety director in the home office and a safety engineer

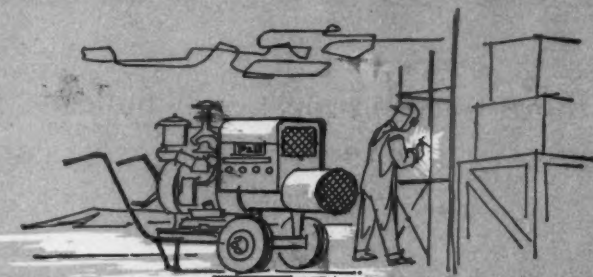
with each of the five spreads. To be eligible for one of these positions, an applicant must be a college graduate and should have a background in safety engineering.

Once on the job, the safety engineer must first sell himself to the workers; then he can sell the safety program. On the No. 1 spread, safety engineer Cliff Orr has a full program that includes meetings with the foremen at least once a week, frequent consultations with the project super-

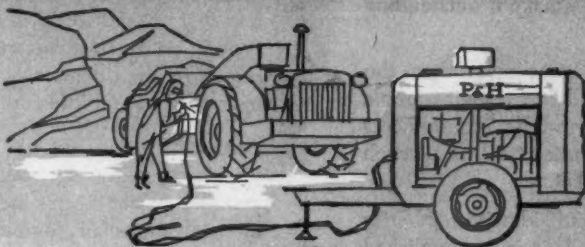
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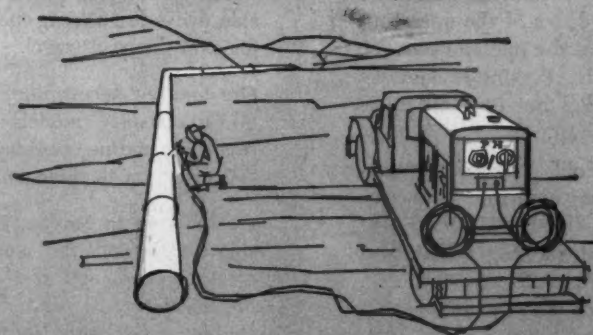
Safety engineer Cliff Orr, 6 feet 4 and weighing over 200 pounds, gives some idea of the size of the CRC Kelly ripper that handled rocky sections on the trenching job.



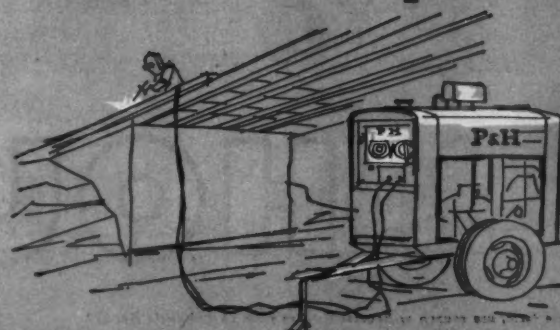
## eliminate rewelds



## and callbacks



## with P&H portable welders



6 engine-driven models for field welding in the 25- to 500-amp. range

Put your out-of-shop welding on a paying basis by welding the job right the first time. You can do it with portable, self-contained P&H engine-driven welders.

Here's why: Accurate voltage control enables operators to make precise settings and re-settings without "jockeying" or other adjustments. Superior current stability — even at extreme ends of range — permits deep penetration without burn-through. Instantaneous recovery maintains 100% arc stability throughout the welding cycle, thus preventing popouts.

The built-in controls simplify welder operation. They enable operators to weld faster — and to lay down stronger, cleaner welds the first time. As a result, there's no need for rewelds or costly call-backs.

P&H welders are built to give long-life, low-cost welder service — to withstand hard use and rough handling in the field. They need less care because all non-essential parts have been eliminated. Powerful gas or diesel engines permit full-shift operation with fuel to spare.

Pick the P&H welder you need from industry's most up-to-date line. Six models, skid- or wheel-mounted — with manual or electric starting. Write for Bulletin W-153.

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For more facts, use Request Card  
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Many superior features engineered  
into this Model H-90B make it

# outstanding

It has more horsepower, better balance, higher dumping  
clearance, longer reach, faster cycles and greater safety

"PAYLOADER" leadership has been maintained through the years with superior design, construction, and performance of each Model. The current Model H-90B is a typical example of this progressive Hough engineering because it has many new, exclusive features and design improvements that make it an even-better performer than before — make it outstanding in its class.

**Outstanding in Power** with 24 more horsepower than the average of eight competitive diesel models . . . with ample power to handle both traction and hydraulic requirements simultaneously . . . to power extra hydraulic attachments such as back hoe, side boom, and 4-in-1 bucket.

**Outstanding in Stability** both endwise and sidewise for better balance under any working condition. This is accomplished by the use of a longer wheel base, a wider wheel tread and improved distribution of greater machine weight.

**Outstanding in Safety** with underslung boom arm design that keeps the operator clear and safe from all moving parts . . . that improves his visibility during all phases of the operating cycle. A fixed ladder is provided so that the operator can get on and off the machine easily and safely. Parking brake does not depend on any of the service brakes but operates independently on the transmission output shaft.

**Outstanding in Power Application.** "Full" power-shift transmission and torque-converter are further improved for better operating characteristics. Exclusive in the H-90B size range is the special oil-to-air fan-cooled heat exchanger that constantly cools the transmission and torque-converter oil . . . keeps it from becoming critically hot even under steady, heavy-duty operation. Larger tires give more traction and flotation,

while power-transfer differentials assure more positive traction by transferring up to 38 per cent more power to the wheels having the best ground grip.

**Outstanding in Hydraulics.** The H-90B is exclusive in its size range in the use of a sealed pressure-controlled hydraulic system that discourages dust and dirt from entering the hydraulic system. A renewable-cartridge type oil filter and fine-mesh screen in the oil reservoir also provide additional protection against wear and interruptions due to foreign matter in the oil.

**Outstanding in Ease of Control and Cycling Speed.** Power air brakes with big braking area on all four wheels, dual-cylinder power-steer, single-lever "no-stop" power-shifting to all gear ratios all combine to provide fatigue-free operator effort and fast, safe operating cycles. Dual "Operator's-Choice" brake pedals—a "PAYLOADER" "first" and an H-90B exclusive in its size range—give the operator a choice of braking with or without transmission engaged, for fullest control under any working situation. The transmission includes a rear (steering) axle drive-disconnect, operable from the driver compartment, for over-the-road travel.

**Outstanding Accessibility** is a plus feature on the H-90B as on all "PAYLOADER" models. Air cleaner, engine and all points requiring routine checking and servicing are located with special attention to their convenient and easy accessibility.

**Outstanding in Service** is your Hough Distributor who sells the H-90B and the complete "PAYLOADER" line of proven tractor-shovels and their many useful attachments. He has one of the finest service and parts facilities in the business supplemented with Hough factory service personnel.

*Copies of the color photo opposite, suitable for framing, are available on request*

THE FRANK G. HOUGH CO.  
762 Sunnyside Ave., Libertyville, Ill.

Send full data on the Model H-90B and its many attachments.

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# Reports continue to show H-120 setting unmatched standards of production and performance

Owners and operators testify that this tractor shovel outperforms and outproduces larger, more costly machines

**Superintendent Says:** "This machine has plenty of power to get maximum loads under all working conditions. The roll-back bucket action heaps and keeps the full load during delivery cycle. The material just seems to flow into the bucket during digging with an absolute minimum effort and no strain whatsoever. The high lift and long reach enables the operator to distribute the load on the truck, enabling the trucker to haul a maximum balanced load to state road specifications."

**Owner Says:** "The H-120 is fast and maneuverable, does numerous jobs that save us time and extra equipment."

**Operator Says:** "Jobs just don't come too big for this machine. Has power to spare. The H-120 gives maximum traction with no wheel spin. I like the comfort and ease of operation. It is a well balanced machine."

**Operator Says:** "The H-120 has unmatched pry-out power and more digging power than any other large rubber-tired loader. The machine never runs hot no matter how hard the digging gets. It has good load-carrying balance."

**Plant Manager Says:** "We needed a versatile machine for large truck and rail car loading and the H-120 with its long reach was the answer to our needs. This unit gives us a 15-foot reach with ease and has very efficient loading speeds. It never uses full power and it fills the bucket with minimum effort. The H-120 has replaced two other loading machines."

**Operator Says:** "I like the H-120 better than anything I've ever run. It's faster, comfortable and easy to handle. The balance is perfect and the safety and visibility is tops because of the lift arm design. The high lift and long reach let me center loads in gondolas of rail cars."

**Owner Says:** "The additional capacity of the H-120 and its faster load-out speeds has cut our basic hauling equipment needs in half on the pit-to-plant short haul operation. The high reach of the bucket gives evenly distributed loads which makes it easier on the hauling equipment."

**Operator Says:** "I know I can handle at least 400 tons per hour and that includes a lot of moving from screen plant to conveyor, or hopper or stockpile. I like the feeling of balance and complete control at high speed operation of this big loader. It may not seem important but there are no sickening fumes coming from a fuel tank filler cap under my nose and there are no lifting arms sweeping past my elbows. I consider it the safest, easiest operating loader I have seen in my long construction experience."

**Superintendent Says:** "The better balance, speed and maneuverability of the H-120 makes it a better buy than larger competitive models tested on the job."

**Operator Says:** "I haven't had to work very hard since putting the H-120 loader on the job. Even with a 23 truck fleet on a short haul, I am waiting for trucks. One day we moved 5,800 tons and could better that if we had a few more trucks. This unit is the fastest working big loader we have ever tried. It's a dream to operate with power controls, fast responses and clear, open vision of the bucket and of the area all around the loader at all times."

You must see the H-120 in action to appreciate its outstanding performance — how it can put out big yardage so easily. With buckets from 4 to 8 cu. yds., more horsepower, higher dumping clearance (10'10"), longer reach (3'6") and many other superior features it is the big news in tractor-shovels. See your Hough Distributor today, or return the coupon.

Copies of the color photo opposite, suitable for framing, are available on request



THE FRANK G. HOUGH CO.

LIBERTYVILLE, ILLINOIS

SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY



# HOUGH®

THE FRANK G. HOUGH CO.

762 Sunnyside Ave., Libertyville, Ill.

Send full data on the big Model H-120 "PAYLOADER."

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

7-B-2

intendent and the safety director, and daily visits to every crew on the job. Unsafe working practices are prohibited, and accident-prone workmen do not stay with the spread long.

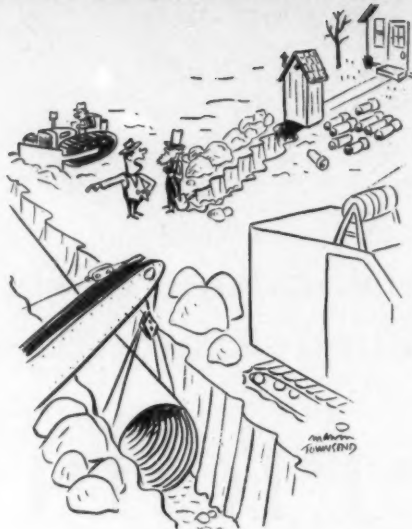
#### Personnel

Supervising the Price Spread No. 1 is G. A. "Abe" Reutzel. The office manager is Ernest Dickson, and the safety engineer, Cliff Orr. Foremen of the several crews are Merle Levitt on the double-jointing, Jim Hairston on right-of-way, Lloyd Loncarich on ditch, John Anderson on bending—with Murray Woodward serving as engineer, Henry Morrison in pipe, Wayne Orr on welding, Sid Wood on coating and wrapping, Athel Bell on

lowering in and backfill, and Eulan McKenzie on cleanup. Master mechanic for the spread is Jack Ingram, Sr.

Field inspection for Transwestern Pipeline Co. is being handled by Gulf Interstate Co. of Houston, Texas. Transwestern's vice president in charge of operations and engineering is N. C. Turner. **THE END**

"In the second place, this happens to be a gas line!"



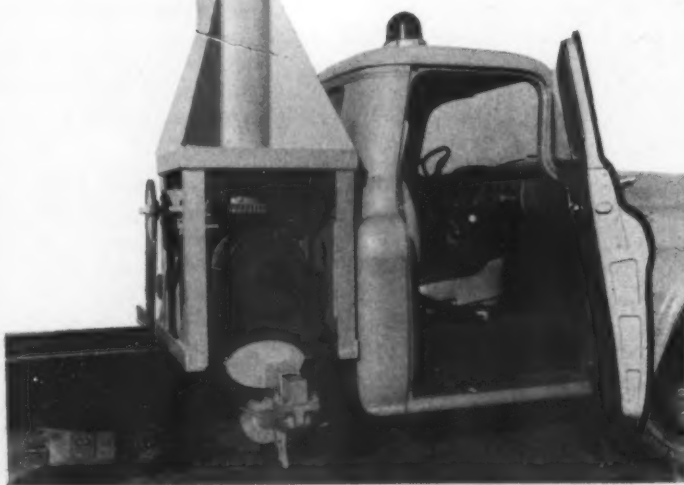
## BRADEN WINCH Special Applications

A special BRADEN Winch can be specially designed for practically any handling or lifting job you need!

Pictured here is a special adaption of standard BRADEN Models MS6, MS9 or MS10, for Mi-Jack Products, Inc. This special winch application is used to operate a versatile revolving boom mounted back of the cab on the right side of the truck.

The boom is being used successfully for line construction and other contracting work, and can operate hole-digging equipment, pull well tubing and many other exacting jobs that require dependable winches that can keep load under perfect control.

A BRADEN engineer will be happy to consult with you on any special handling job, or show you how standard models can be adapted for special work. Write for complete information.



**BRADEN WINCH** DIVISION OF MOTOR PRODUCTS CORPORATION  
P. O. BOX 547 • BROKEN ARROW, OKLAHOMA

"In Service Around the World"

For more facts, use Request Card at page 18 and circle No. 274

### New ACI bibliography on concrete strength tests

■ "Evaluation of Strength Tests of Concrete," Bibliography No. 2, has been published by the American Concrete Institute. It lists and annotates selected articles that appeared in technical publications from 1924 to 1958, and that deal specifically with compression tests of concrete, variations in test results, and evaluations of tests.

ACI Committee 214, which compiled the bibliography, points out the value of statistical methods as applied to the control of concrete quality. Listed in the bibliography are articles by such construction agencies as the Hydro-Electric Power Commission of Ontario, the U. S. Bureau of Reclamation, and the U. S. Army Corps of Engineers, which have applied statistical methods in evaluating the quality of concrete. Papers on the subject, published in different parts of the world during the past 12 years, are also listed.

The bibliography is in 8½×11-inch format, is saddle-stitched, and punched for insertion in a 3-ring binder. Copies, priced at \$2, may be obtained from ACI, P. O. Box 4754, Redford Station, Detroit 19, Mich.

### Transportation is subject of new engineering book

■ A new book, "Highway and Airport Engineering," by Adrian R. Legault, has been published by Prentice-Hall, Inc. Written from the viewpoint of the civil engineer, it is intended to serve as an introductory text on the subject.

The book traces the history of land and air transportation and details plans, specifications, contracts, location, and geology and soils as related to highway and airport systems, in addition to other pertinent topics such as the design of city streets, drainage problems, constructing the grade, and bituminous pavements. Waterways and pipeline systems are also discussed. Numerous photographs, drawings, and tables are included.

Copies, priced at \$11.65, are available from Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y.

## Gives a Man Giant Strength



## CM PULLER

- **SMALL**  
Lever is only 20½" long.
- **POWERFUL**  
83 lbs. on lever produces 3,000 lbs. at hooks. "1½ ton model."
- **VERSATILE**  
"CM-Alloy" flexible welded chain. Lifts or pulls at any angle.
- **PORTABLE**  
Made of aluminum alloy. ½ ton model weighs only 14 lbs. Capacities ½ to 6 tons.

**A NATURAL FOR CONSTRUCTION WORK**  
The "CM" Puller will do a "thousand-and-one" jobs for you. It will do them faster, safer and far easier. The "puller" is compact... stores conveniently in a tool box. Lifetime lubricated. Every contractor should have one.



SEND FOR "CM" PULLER BULLETIN 146 AND NAME OF YOUR LOCAL DISTRIBUTOR.

**CHISHOLM-MOORE HOIST DIVISION**  
COLUMBUS McKINNON CHAIN CORPORATION  
TONAWANDA, NEW YORK  
REGIONAL OFFICES: NEW YORK, CHICAGO, CLEVELAND  
In Canada: McKinnon Columbus Chain Limited, St. Catharines, Ont.

For more facts, circle No. 275

CONTRACTORS AND ENGINEERS





Samuel J. Lefrak, president of the Lefrak Organization, points to a model of Lefrak City, to be built soon in Forest Hills, N. Y. Costing more than \$100 million, the new housing development will cover 40 acres.

### Skyscraper city planned for metropolitan area

■ Lefrak City, a mammoth apartment-house development costing more than \$100 million and housing over 5,000 families, will be built on a 40-acre site in the Forest Hills section of Queens, New York City, by the Lefrak Organization, Forest Hills.

The development will consist of six units—one containing a shopping center with 150,000 square feet of street-level retail store space, plus a parking area for 500 cars; and five sections, built in a wheel-and-spoke design, each containing four apartment houses limited to 16 stories in height. The "City of Tomorrow" will have an office building, two theaters, and its own heliport.

Construction, scheduled to begin this month, is expected to be completed by 1964.

### Buffalo-Springfield personnel changes

■ Two district representatives and an order service manager have been appointed by the Buffalo-Springfield Co., Springfield, Ohio, a division of Koehring Co. Covering the Midwest and the plains states is Robert E. Dennis, who previously had been demonstrating new and specialized Buffalo-Springfield equipment. He represents the division's complete line of products: Buffalo-Springfield compaction equipment, Stardrill-Keystone drilling machines, and Flaherty aggregate spreaders and power brooms.

Evan W. Evans has been appointed district representative in the southeastern United States and will handle Buffalo-Springfield compaction equipment and Flaherty spreaders and brooms. Until now, he has been service and parts manager for the division. John Pamer, who has been appointed order service manager, will take over Evan's previous duties, handling all orders for Buffalo-Springfield and Stardrill-Keystone products. He joined the Buffalo-Springfield Co. in 1959 when Koehring Co. acquired the Stardrill-Keystone Co., with which Pamer had been associated for many years, and made it part of the Buffalo-Springfield division.

### Winners of scholarships are announced by AISC

■ Ten high school seniors have been chosen as winners of \$1,000 scholarships in civil and architectural engineering, in the eleventh annual contest of the American Institute of Steel Construction, a national organization representing the structural-steel fabricating industry.

Seventy-five high school seniors, representing 27 states and sponsored by 50 members of the AISC, took part in the contest. The ten winners were selected by a jury of engineering educators on the basis of their grades in College Entrance Examination Board tests and their records as all-around students. Eleven alternates

were named, in case winners could not accept the awards. The scholarships may be used in any one of 136 accredited colleges and universities offering the engineering degrees.

The ten winners are: Brian William Adams, Wauwatosa, Wis.; Kenneth Woodrow Axetell, Jr., Richmond Heights, Mo.; Dennis Bridge and Douglas C. Creed, Pittsburgh, Pa.; Richard Leslie Daugherty, Baltimore, Md.; Robert Marc Horowitz, Bronx, New York City; Robert George McKean, Omaha, Nebr.; Gerald Orri-son, Kansas City, Mo.; Russell Charles Walter, New Haven, Conn.; and Victor Soland, New York City.

## REDUCE COST AND DOWNTIME... WITH



RENEWABLE SPROCKET RIMS



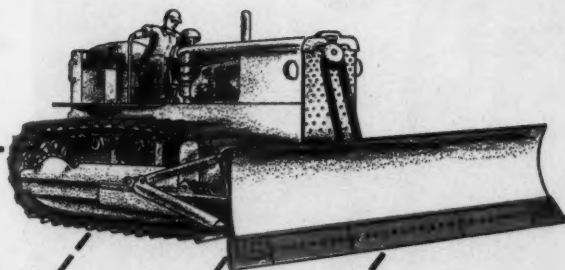
TRACTOR PADS



END BITS

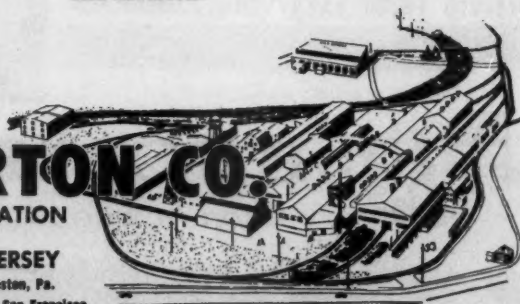


DOZER BLADES



## TISCO TRACTOR REPAIR PARTS

Made of tough Manganese Steel which "improves with age" becoming harder from impact and the stress and strain of machine operation, Tisco Sprocket Rims, Tractor Pads, End Bits and Dozer Blades are designed to give longer service life and greater economy of operation - - **WRITE TODAY FOR BULLETIN 1-59** which describes how worn sprockets can be readily reclaimed; how it has been possible for special design features to be incorporated into Tisco Tractor Pads and how Tisco End Bits and Dozer Blades resist abuse and abrasion.



## TAYLOR-WHARTON CO.

DIVISION OF HARSCO CORPORATION

Established 1742

HIGH BRIDGE 10, NEW JERSEY

PLANTS: Cincinnati, E. - Birmingham, Ala. - Easton, Pa.

SALES OFFICES: New York - Chicago - Milwaukee - San Francisco

For more facts, use Request Card at page 18 and circle No. 276

TO DOUBLE THE CAPACITY of the Galveston, Texas, Isle Causeway, four lanes are being added by the Texas Gulf Construction Co. Placing concrete is a Manitowoc Model 3900 crane equipped with Gar-Bro 2-yard bucket. The rig was also used to drive piles. Planned for 1961 completion, the causeway is a federal-aid project, supervised by the Texas Highway Department.



## IF YOUR CRAWLERS HAVE "CLASH BOXES" BETTER CHECK THE ADVANTAGES OF THE "EUC" C-6

Without full-power shift even a "brand new" tractor is an obsolete machine in performance and work-ability when compared with the new Euclid C-6 crawler. For the fast response and all-around versatility that's needed in mines, quarries, construction and industrial work, no other tractor has all the advantages you get in the C-6.

Proven Torqmatic Drive provides full-power shift and instant reverse without delay for clutching and shifting . . . with a flick of the wrist you change direction or from one speed range to another. It's the same easy-to-operate power train that has proved its dependable service in thousands of other earthmovers.

Get the facts on how the C-6 can cut costs on your jobs . . . from dozing and ripping to push-loading big scrapers. You'll find the many operating advantages of this modern tractor will bring you a better return on your investment.

EUCLID DIVISION OF GENERAL MOTORS, CORP., CLEVELAND 17, OHIO

**DOZING and RIPPING . . .** plenty of power, easy operation and good stability make the C-6 tops for work in rough going and heavy material.



## EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

For more facts, use Request Card at page 18 and circle No. 277

### White division opens new Cincinnati headquarters

■ New, modern Cincinnati branch headquarters have been opened by the White Truck Division of The White Motor Co., Cleveland, Ohio. Located at Spring Grove and Station Avenues, the new facility replaces the former headquarters at 2230 Gilbert Ave.

Serving truck users in the area as a factory branch for sales, parts, and service of White, Autocar, and Reo trucks and tractors, the new building features an extensive parts stock for all makes of trucks, a drive-through service area, and a fully equipped machine shop with a dynamometer.

The building has extensive black-top off-street parking space, and the service department can accommodate 36 trucks or 40 tractors at one time.

### Le Roi Division makes personnel changes

■ Thomas E. Stone has been made mountain-region sales manager for Le Roi Division, Westinghouse Air Brake Co., Milwaukee, Wis. With headquarters in Denver, he will supervise sales and service of the division's air tools and air compressors in Colorado, Utah, eastern Idaho, Wyoming, Montana, and the western parts of North Dakota, South Dakota, and Nebraska.

W. E. Mattson, who formerly held the post, has been transferred to Milwaukee, Wis., to direct sales in the central region. Stone will be succeeded as district representative in Utah, eastern Idaho, and western Colorado by H. A. Orlik, a former drilling specialist for the company. He will work out of Salt Lake City.

### Black & Decker acquires DeWalt as subsidiary

■ By an agreement with American Machine & Foundry Co., The Black & Decker Mfg. Co., Towson, Md., has acquired the entire capital stock of DeWalt, Inc., Lancaster, Pa., wholly owned subsidiary of American Machine & Foundry, in exchange for 120,000 shares of Black & Decker stock.

DeWalt will be operated as an independent subsidiary of Black & Decker, under DeWalt's present management. Manufacturing, research, and engineering operations will continue at the Lancaster plant, and methods of distribution will remain unchanged.

### American Pulley becomes Van Norman division

■ The American Pulley Co., including its Hubbard Spool Division, has been merged into Van Norman Industries, Inc., New Bedford, Mass. Two shares of Van Norman common stock are being issued for each share of American Pulley capital stock.

American Pulley is a pioneer in the power-transmission industry and is a manufacturer of building equipment. Hubbard Spool makes spools and reels for the wire industry.

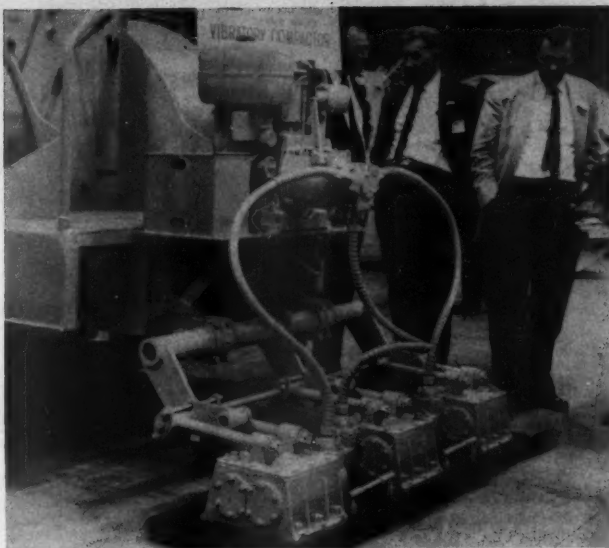
CONTRACTORS AND ENGINEERS



## Distributor Doings

# Meeting gives dealers view of company's 5-year plan

One of the new machines that attracted attention at the distributor gathering was a Huber-Warco vibratory compactor. Here the unit is shown mounted at the rear of an H-W roller. The vibratory compactor will soon be available for sale to contractors, governmental agencies, and other markets.



A 3-day meeting for the distributor organizations of Huber-Warco Co., Marion, Ohio, held May 17-19 at the Pick-Fort Hayes Hotel, in Columbus, marked the completion of a 5-year program of plant consolidation and product engineering development.

Over 300 dealers from the United States, Canada, Mexico, and Cuba came to meet the people responsible for Huber-Warco's progress and to hear talks by company personnel on the product line, parts and service, financing, and sales plans. A caravan trip to the plant at Marion was featured, as well as a showing of Huber-Warco's complete line of motor graders, road rollers, and road maintainers at the Marion Coliseum.

Featured speakers included H. A. Radzikowski, chief of the Division of Development for the U. S. Bureau of Public Roads, and Everett S. Preston, director of the Ohio Department of Highways.

It is only five years since Huber-Warco began operations. In 1955, The W. A. Riddell Corp., Bucyrus, maker of motor graders, consolidated with the Huber Mfg. Co., of Marion, maker of 3-wheel and tandem rollers and a maintainer, enabling the new company to offer its distributors a more complete line.

In the first few months after the two companies combined, many departments were integrated, including management, engineering, and sales. In 1959, the Bucyrus plant was discontinued, and all manufacturing has

(Continued on next page)



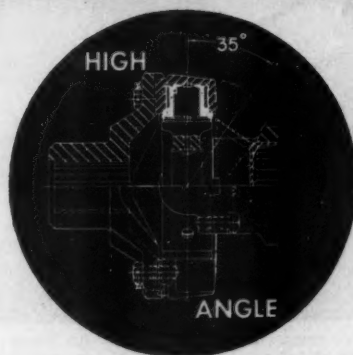
Huber-Warco president, Jacques E. Jones, discusses his company's equipment line with H. A. Radzikowski, chief, Division of Development, U. S. Bureau of Public Roads; Richard Kennedy, H-W's export sales manager; and Brunon Nowicki, district highway engineer, Warsaw, Poland. Radzikowski gave a talk on "Equipment Specifications" at H-W's distributor meeting. Nowicki has been studying advanced highway engineering at Ohio State University under International Road Federation sponsorship.

JULY, 1960

## RIGHT SOLUTION

## TO A

## TOUGH PROBLEM



Designers with HIGH ANGULAR and LONG SLIP JOINT problems have learned to rely on MECHANICS. Where joints must run all day at constant angles up to 45°—where there are severe shock loads—where wide angles and long slip are common—and where dirt and/or moisture are continually present—MECHANICS Roller Bearing UNIVERSAL JOINTS are the accepted solution. Lifetime or once-a-season lubrication is so tightly sealed in that dirt and mois-

ture cannot enter. If you have a "tough" joint problem and need the "right" solution, it will pay you to make use of MECHANICS engineers' wide experience in solving power transmission problems in hundreds of different fields.

### MECHANICS UNIVERSAL JOINT DIVISION

Borg-Warner • 2030 Harrison Ave., Rockford, Ill.

Export Sales: Borg-Warner International  
36 So. Wabash, Chicago 3, Illinois

## MECHANICS UNIVERSAL JOINTS

Roller Bearing

- For Cars • Trucks • Tractors • Farm Implements • Road Machinery •
- Aircraft • Tanks • Busses and Industrial Equipment •

For more facts, use Request Card at page 18 and circle No. 278



Part of the crowd of over 300 representatives of Huber-Warco distributors looks over the company's line at the Coliseum in Marion, Ohio. The showing was a feature of the recent 3-day meeting of distributor organizations from the U. S., Canada, Mexico, and Cuba.

(Continued from preceding page)

since been carried out at the 20-acre plant in Marion.

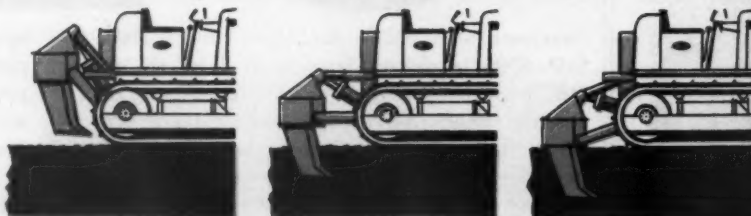
At the same time, Huber-Warco was awarded a contract by the U. S. Army Corps of Engineers to deliver 709 motor graders of the 125-hp class over an 11-month period. They will be used all over the world by the Army, Navy, and Air Force on con-

struction and maintenance work. A standard production model is being used, except for some units that are winterized and able to operate in temperatures to minus 65 degrees F. Over 5,000 tons of steel and 581,000 pounds of tires are going into the order.

The company recently completed a



The unique parallelogram design of Allis-Chalmers rippers keeps shanks at the most effective angle . . . up . . . halfway down . . . down full depth.





new manufacturing plant in Brazil. According to president Jacques E. Jones, "We now have the product line, the manufacturing facilities, and the world-wide sales organization to step ahead in a real way in the 1980 decade."

#### New Parsons dealers

Wood Tractor Co., 5241 N. E. 82nd Ave., Portland, Ore., has been appointed a distributor by the Parsons Co., division of Koehring Co., Newton, Iowa. The dealer will sell and service the complete line of Parsons ladder and wheel-type trenchers

throughout Oregon, except in Malheur County, and in five southern Washington counties.

Parsons has named Pelican Machinery Co., Bossier City, La. to handle this line of trenchers in northern Louisiana.

#### Moon Equipment Co. buys Yale branch

The newly formed Moon Equipment Co. has purchased the Cincinnati branch of Yale Materials Handling Division, The Yale & Towne Mfg. Co., Philadelphia, Pa. Harold E. Moon, formerly manager of the Cin-

cinnati branch, is president of the new company.

Operations will be carried on from the same recently enlarged facilities at 9880 Springfield Pike. Moon Equipment Co. is now the franchised representative for Yale industrial lift trucks and tractor shovels in southwestern Ohio and also in northern Kentucky.

#### New dealers for Dart

Six new dealers have been appointed by Dart Mfg. Co., Denver, Colo., to sell and service the firm's line of concrete vibrators. Three of the dealers

are in Florida: St. John's Equipment Co., 1825 Franklin St., Jacksonville 6; Safway Scaffolds, Inc., 1218 29th Ave. W., Bradenton; and Alexander Equipment Co., Inc., 1617 S. Division St., Orlando.

Also named are: Tri State Tractor Co., 880 Glenwood Ave. S.E., Atlanta, Ga.; M & M Equipment Co., 1307 E. Washington St., Louisville, Ky.; and C. T. Pike Equipment, 703 Huntwood, St. Louis 22, Mo.

#### Parker-Hannifin names seven new distributors

New distributors for Crown components for compressed-air systems have been announced by Parker-Hannifin Corp. The air-pressure regulators, air filters, and lubricators are made by the Hannifin Co. division in Des Plaines, Ill.

The dealer in Tennessee is Tennessee Machinery Co., 113 Third Ave. S., Nashville; in Ohio, Stambaugh Supply Co., 102 E. Commerce St., Youngstown; in Indiana, Powered Equipment Inc., 420 N. Ninth St., Terre Haute; and in California, Haskel Engineering & Supply Co., of 1236 S. Central Ave., Glendale, and 225 11th St., San Francisco.

Parker industrial hose and re-usable hose fittings, made by Parker-Hannifin's Parker Fittings & Hose Division, Cleveland, will be distributed by Fluid Power Division of Equipment Sales Co., Inc., 649 Ashby St. N.W., Atlanta, Ga. and by Livingston & Haven, Inc., 2115 Meeting Street Rd., Charleston, S. C., and 1119 East Tenth St., Charlotte, N. C. The hose and fittings will also be handled by Brady Engine Company of Houma, Inc., 1707 East Main St., Houma, La.

#### Koehring names dealer

The Koehring Division of Koehring Co., Milwaukee, Wis., has named Pelican Machinery Co. of Shreveport, P. O. Box 5593, Bossier City, La., distributor for northern Louisiana. It will handle the complete line of Koehring construction equipment.

The dealer will be under the same general management as Pelican Machinery Co. of New Orleans, distributor for southern Louisiana, but will operate as a separate entity.

#### Hale distributors

Hale Fire Pump Co., Conshohocken, Pa., has appointed Central Sales & Service Co., Inc., Baltimore, Md., a distributor for its contractor and industrial pumps. Central Sales' area will cover Washington, D. C., and all of Maryland, except Garrett, Allegany, and Washington counties.

In Florida, Hale has named the Marine Industrial Equipment Corp., Jacksonville, to distribute these pumps in a northern area of the state bounded by and including Manatee, Hardee, Polk, Osceola, and Brevard counties.

M & M Equipment Co. has been made a distributor of the Hale line of diaphragm and centrifugal pumps for contractors in southern Indiana and Kentucky.

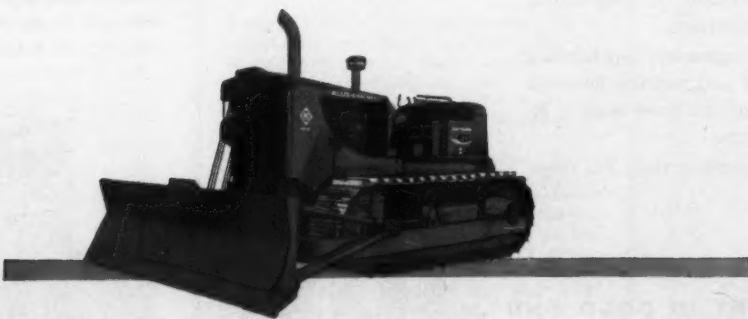
## TOUGH TOOLS MATCH TOUGH JOB POWER

Allis-Chalmers rear-mounted rippers maintain most effective penetration angle at all depths... up front, specially designed bulldozers make most of HD-21's tremendous power.

Modern tractor power, *plus* modern ripper and dozer design, is making a big difference on today's tough jobs. With the HD-21 and ripper, for instance, up to 60,000 pounds of drawbar pull let you rip 'n' doze what you once shot and shoveled... puts one man, one modern machine in place of a typical 4-man blasting operation.

Allis-Chalmers leads the field in making rippers practical and effective for these tough jobs. The introduction of *parallelogram design* — unique Allis-Chalmers feature on these big HD-21 rippers — keeps shanks at most effective penetration angle at all depths. You get the same effective tooth angle... up... halfway down... or working a full two feet deep!

In addition, Allis-Chalmers dozer design utilizes the latest developments in steel to produce durability which makes the most of today's big tractor power without profit-killing maintenance and repair. Trunnions, "C" frames, struts and moldboards match the HD-21's brute strength. If you're bidding or working any tough materials, your Allis-Chalmers dealer will furnish all the facts on successful ripper/dozer application. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



move ahead with  
**ALLIS-CHALMERS**  
power for a growing world



## Grading change on adjacent road sections



Borrow material for the Frank Palazzi & Sons contract on a new section of New Hampshire interstate is loaded by a Lorain 850 shovel with 2½-yard bucket to a Euclid rear-dump hauling to the crusher setup in the borrow pit.



The Cedarapids crushing unit separates excess fine sand from the bank-run gravel and reduces gravel to a 2-inch maximum. Crusher output is charged by conveyor to waiting Mack trucks.



Get all these performance features:

1. conventional drilling with rifle bar rotation and no rotation assist
2. booster power with rifle bar rotation plus rotation assist
3. rotation with booster rotation alone for hammer-free steel changing

All of these operations are handled from a central remote control station

### Get all the performance that's possible in a rock drill with the Joy 450-DR Dual Rotation Drill

With the new Joy 450-DR Dual Rotation drill you get normal drilling with rifle bar rotation for proven, trouble-free holing ability. You also get hammer-free rotation for fast steel changing, and a strong assist to rifle bar rotation when needed for extra tough drilling. A powerful air motor geared to the chuck provides the extra power for rotation assist and steel changing. A safety clutch prevents damage to all moving parts of the rotation mechanism.

The TDM carrier has exclusive features that make it rugged and dependable. The heavy U-Bar feed mounting gives stable support and permits holes at almost any angle. An optional automatic hose reel keeps all hoses leading to the drifter neatly in place, eliminating wear and breakage.

Find out more about this powerful, automatic drill combination. For complete information, write for Bulletin 1018-21.



JOY CONSTRUCTION EQUIPMENT IS SOLD AND SERVICED BY THE JOY DISTRIBUTOR IN YOUR AREA



Portable Compressors



Track Drills



Tungsten Carbide Rock Bits



Hand-Held Rock Drills

# JOY

Joy Manufacturing Company  
Oliver Building, Pittsburgh 22, Pa.

In Canada: Joy Manufacturing Company  
(Canada) Limited, Galt, Ontario

For more facts, use Request Card at page 18 and circle No. 280

Three contractors on three adjacent projects are shaping a 2.27-mile section of New Hampshire's Interstate A93, south of Manchester, an east-west route connecting the Everett Turnpike and State Route 28.

It is the first link of a southern belt line around Manchester; when completed in October, it will enable traffic on Route 101 to bypass the city.

#### Grading and structures

Two of the three contractors, Frank Palazzi & Sons, Inc., Concord, N. H., and Coleman Bros. Corp., Readville, Mass., have roadway contracts amounting to \$1,380,000 and \$1,211,500, respectively. Munroe Langstroth, Inc., Norwood, Mass., was awarded the \$1,428,100 contract to construct the Merrimack River twin-bridge crossing, which actually separates the Palazzi and Coleman projects.

Palazzi's job involved moving and placing over a million cubic yards of borrow. This material, obtained from three borrow pits, was handled by three scrapers—two twin-engine Euclids and a Caterpillar DW21—and three Lorain 850 shovels equipped with 2½-yard buckets.

Two of the shovels worked one pit that yielded 850,000 yards of borrow. The third shovel worked the two smaller pits to make up the required borrow. Up to 20 hauling units—13 Mack B81 diesel dump trucks and 7 Euclid rear-dumps—handled the hauling assignment on the 1.04-mile-long contract.

During peak operations, using three scrapers and three shovels, Palazzi averaged 13,000 cubic yards of excavation per 9-hour workday.



Crushed gravel is dumped to the roadway embankment by a Mack truck on the Interstate project.

CONTRACTORS AND ENGINEERS

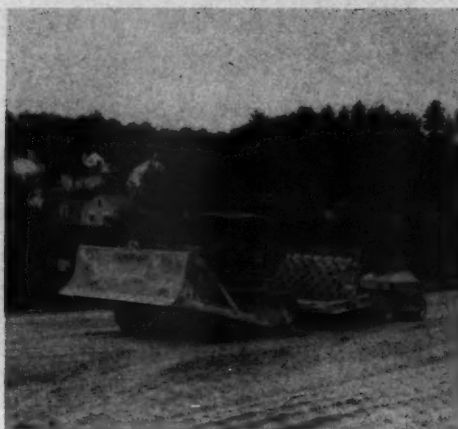




As the required fill material is being placed, it is compacted by a Terrapac vibratory roller pulled by an International tractor.



On the contract held by Coleman Bros. Corp., Readville, Mass., scrapers handle borrow material. This DW21 is push-loaded by a D9 in one of the three pits.



Material placed for one of the approach ramps on the Coleman contract is compacted by a sheepfoot and a pneumatic roller pulled by an International tractor.

#### Crusher unit used

In the large borrow pit, located at the western end of the contract near U. S. 3, the contractor set up a Cedar-rapids crushing unit to separate the excess fine sand from the excavated bank-run gravel. The gravel was reduced to a maximum 2-inch size by the crusher and was charged directly to the Mack dump trucks. This crushed-gravel material, which amounted to over 40,000 cubic yards, was used atop the roadway fills.

Palazzi used the fine sand to dust the second seal coat under the asphaltic-concrete roadway and shoulders. The fine sand was also used to cover the roadway slopes. Only two Euclid rear-dumps were used to haul the borrow excavation between the pair of shovels and the crushing unit. As the borrow material was placed, it was compacted by a Terrapac vibratory roller pulled by an International tractor.

#### Paving to be done

The contractor has already paved some ramps of the interchange with the Everett Turnpike, but most of the surfacing will be done this season. Using an Etnyre 2,100-gallon pressure distributor, Palazzi first applies MC-2 asphalt at the rate of 0.6 gallon per square yard for the penetration treatment of the subgrade.

After a few days, an RC-1 seal coat, applied at a rate of 0.3 gallon per square yard, is placed by the distributor. The seal coat is then dusted with the fine sand obtained from the crushing setup.

The seal coat is topped with a 2½-inch asphaltic-concrete base course having 1½-inch-minus aggregate. This is followed by a 2-inch binder course and a 1-inch wearing surface.

#### Bridge contract

The 914-foot-long, 7-span Merri-mack River Bridge at the eastern end of Palazzi's contract consists of 6 piers and two abutments for each of the twin structures. Munroe Langstroth had to drive cofferdams for each of the hammerhead-type piers, which are founded on rock.

For the piers immediately adjacent to the shore line, the contractor extended earth-filled fingers into the river so that sheeting could be driven (Continued on next page)

## Put your finger on a

### NEW, PROFITABLE READY MIXED CONCRETE MARKET

... Sell concrete for highway construction with a BUTLER HP-85 Portable Ready Mixed Concrete Plant

**READY MIXED OPERATORS** ... Take advantage of the swing to ready mixed for highways. It's a new source — an additional source — for substantial profits.

And the highway contractor will welcome you as a prime contributor to greater earnings in his pocket. Here's why:



With his purchase of ready mixed concrete from you, he eliminates a \$50,000 dual drum paver.



And he eliminates a high-priced, 5 man paver crew



— as well as a batching plant and batch trucks.



With concrete from your completely automated BUTLER HP-85 Portable Plant, the contractor gets a uniform, inspector-pleasing, non-segregated mix, pin-pointed to any specification —



and he speeds up his job with less supervisory headaches and overhead.

**Production up to 200 cubic yards an hour**

A Butler HP-85 Portable Ready Mixed Plant, completely automated, equipped with two turbine-type mixers, easily charges your transit mix trucks at the rate up to 200 yards an hour. That's enough to keep ahead of any highway demand — without a single bead of sweat.

And Butler simplified, in-place, quick-connected automation is interlocked against human error. You have faster batching for every material, water included, with a perfection in accuracy that makes friends of tight specifications, the inspector and your contractor-customer.



**WITH BUTLER PROFITABILITY YOU SELL HIGHWAY CONCRETE 100... 200... 500 MILES FROM YOUR OFFICE**

Here's a picture story of transport and erection — the ultimate in portability.

• The compartmented bin section ships complete with lugs attached for crane lift.

• Batcher section is a complete unit with all piping, wiring, batchers and automatic controls in place, ready for plug-in.

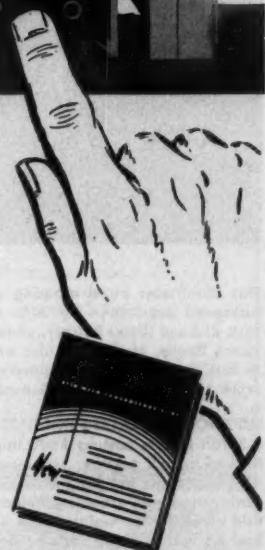
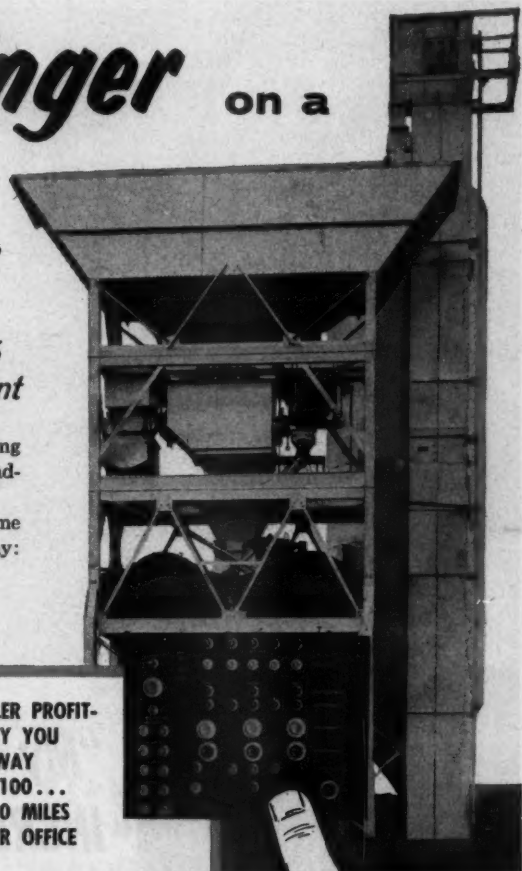
• Mixer section is also a complete unit with two turbine mixers, gates and controls pre-installed. Circuitry is completed with plug-in quick connectors. Support columns ship separately. These are quickly pinned to the mixer platform and swing into place as the mixer section is raised.

On a highway job, a move to the next section is made as quickly as with a batching plant — in fact faster than most.

### BUTLER BIN COMPANY

971 Blackstone Avenue • Waukesha, Wisconsin

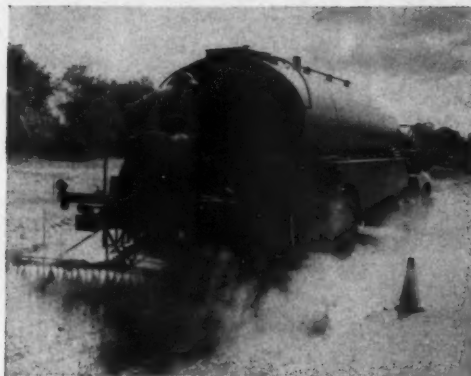
For more facts, use Request Card at page 18 and circle No. 231



For healthy business and profit growth in this new market, send for the new, detailed BUTLER HP-85 Bulletin. Just jot your request on a postcard. You'll get a prompt reply.



The 914-foot-long Merrimack River Bridge separating the Palazzi and Coleman contracts is being built by Munroe Langstroth, Norwood, Mass. Earth fingers extended out into the river allow cranes to work on formwork and on concrete for piers next to the shore. A barge-mounted crane works on the mid-river piers.



An Etnyre 2,100-gallon pressure distributor applies RC-1 seal coat, at a rate of 0.3 gallon per square yard, over the MC-2 asphalt penetration treatment of the subgrade for the 10-foot outside shoulders of the Everett Turnpike. It will be topped with an asphaltic-concrete binder and wearing course.



## "My General 2-3 Ton Roller INCREASED Production by 34%, DECREASED Labor Costs!"

**ELIMINATES HAND TAMPING: "My General 2-3 Ton Roller  
works flush against building lines and curbs."**

This eliminates hand tamping completely! The General has increased production by 34% and decreased labor costs," says Richard (Dick) Palmer, owner of Palmer Asphalt Paving, Penns Grove, N. J. "I've also experienced a steady increase in business," continues Palmer, "because of the top quality work I can count on my General 2-3 Ton Roller to deliver."

**SUPERIOR TO ROLLERS COSTING \$600 MORE:** "I have owned 2-3 Ton Rollers costing \$600 more, but my General tops the best of them." Another feature of the General 2-3 Ton Roller that impresses Mr. Palmer is the Lifetime Guarantee on the compaction roll, standing behind it for life against damage and wear. As for maintenance and downtime problems: "I've had no maintenance costs or downtime in the two years I've owned the machine," he reports.

**EASY TO OPERATE AND MAINTAIN:** So easy to operate that anyone can master its controls within minutes. Push button electric starting, Link-Belt roller chain steering, automatic forward and reverse transmission, automotive type hydraulic brakes. Working parts are enclosed but easily accessible for maintenance. The General 2-3 Ton Roller has a turning radius of only 12 feet. Oversize water tanks and roll scrapers with imported cocoa mats are standard equipment. **ALL THIS FOR A PRICE FAR BELOW ALL COMPETITIVE ROLLERS!**

Also available in ½-1-3-5-4-6 Ton Models. Get the details today! Contact the Dealer nearest you or write, wire, or telephone direct; Dept. CE7-0.

Tilden 5-5400, Cable Address: Geneng Thorofare, N. J., Dealer Inquiries invited

# GENERAL ENGINES

GENERAL ENGINES CO., INC., ROUTE 130, THOROFARE, NEW JERSEY

For more facts, use Request Card at page 18 and circle No. 282

(Continued from preceding page)

for the cofferdams. For the remaining river piers, a Lima crane, mounted on a 40x60-foot barge, handled the sheet-driving assignment.

Before pouring the pier footings—the largest measured 34x20 feet and 7 feet in thickness—a minimum 11-foot tremie seal was placed to permit dewatering the cofferdams. Using one set of prefabricated plywood forms, the contractor formed the 56-foot-tall piers in three lifts.

Only enough forms were on the job for a single pier, but the varying tapered sections of the piers allowed work to be done on 3 piers simultaneously. Forms were left in place for at least a week but could be removed after three days if the concrete was sprayed with a curing compound.

Each of the hammerhead caps is about 35 feet wide and will support a 30-foot-wide roadway for each structure. Five welded-plate girders will span the piers for each roadway structure. These members will support the 6¾-inch concrete deck slab that will, when completed in October, be topped with a 2-inch asphaltic-concrete wearing surface. The main river span in each structure is about 180 feet long.

### Other grading contract

The Coleman Bros. project, located on the east side of the Merrimack River, is strictly a scraper operation. The contractor is using three Caterpillar DW21 scrapers, push-loaded by a Cat D9 tractor-dozzer, to handle the 440,000 cubic yards of roadway excavation and the 200,000 yards of borrow.

A total of three borrow pits was required to obtain the fill for the 1.23-mile-long project.

Coleman had one major problem on this job—silt. This was encountered in a 1,000-foot-long, 64-foot-deep cut. Once the excavation of this cut got under way, the contractor hit the silt lying under a 15-foot sand overburden.

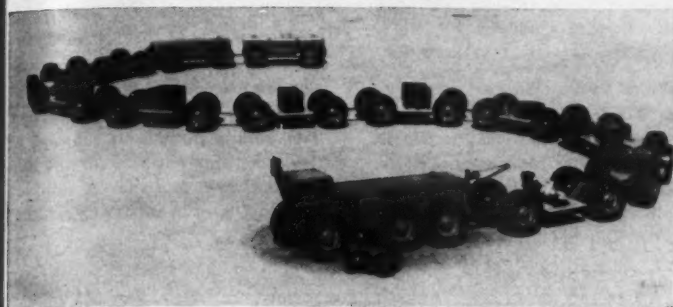
Analysis of the silt showed that 98 per cent passed the No. 200 sieve and that it contained about one-third water by volume. This material was excavated by the scrapers, hauled to fill areas, and dumped and spread in 6-inch lifts. The contractor used the

(Continued on next page, col. 3)

CONTRACTORS AND ENGINEERS



A scale model of a jeep indicates the comparative size of the logistical cargo train, being constructed for the Army by R. G. LeTourneau, Inc. The 13-unit train will have 10-foot-high rubber tires, developed for shock resistance and high flotation. The tubeless tires are of extreme low-pressure design.



(Continued from preceding page)

toe of the dozer blade to form furrows that were covered with sand. The materials were then mixed.

This aeration was necessary to reduce the water content in the silt to a maximum 15 per cent in order to permit proper compaction. Excavation of the silt was extended to 6 feet below the design subgrade; backfilling to grade was done with sand, gravel, and crushed gravel. Sheepsfoot rollers, used during the aeration process, were also used for the compaction of the backfill.

#### Personnel

John Palazzi is the vice president and general superintendent, and Parker Sawyer, the job superintendent

for Frank Palazzi & Sons. John Mill is the general superintendent for Munroe Langstroth. Frederick Drew, Jr., is the resident engineer for these contracts for the New Hampshire Department of Highways.

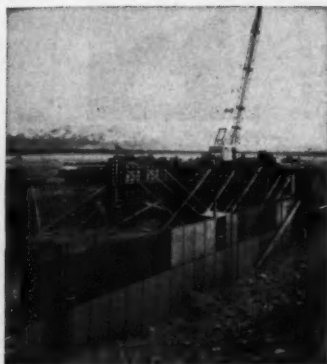
Joseph S. D'Ambrosio is the superintendent, and Frank Frisselle, the office manager for Coleman Bros. Donald E. DeCamp is the resident engineer for the highway department on this project.

THE END

#### Acme-Hamilton names

Irving L. Meyer has been appointed treasurer of Acme-Hamilton Mfg. Corp., Trenton, N. J., maker of suction hose. Meyer was previously treasurer of Heyer Industries, Inc., Belleville, N. J.

## 25% Saving!



### Jet Age Concreting with Symons Steel-Ply Forms

#### ... Cut Costs on Salt Lake Municipal Air Terminal

Christensen Bros., Salt Lake City, through a combination of sound engineering, imaginative forming with Symons Steel-Plys and efficient pouring methods have proved that even a jet age terminal building can be constructed rapidly and at moderate cost.

It was vitally important that costs be held to a minimum. Costs to the contractor on the basis of 150 re-uses of the forms amounted to about 15¢ per square foot. After four months' work, the cost of handling and stripping the



Designed for Salt Lake City Corporation by the architectural-engineering firm of Ashton, Evans and Brazier.

forms had dropped about 25 percent, compared to previous methods of handling heavier job-made forms. Also, costs were progressively reduced with each use of Symons Steel-Ply Forms.

Try Symons Forms on your next job. They can be rented with purchase option. Symons new instruction manual sent free on request.

**Symons**  
SYMONS CLAMP & MFG. CO.  
4251 Diversey Ave., Dept. G-0, Chicago 39, Ill.  
Warehouses Throughout the U.S.A.

MORE SAVINGS FROM SYMONS

For more facts, circle No. 233

### LeTourneau producing 13-car overland train

A new type of overland train that rides on 10-foot-high rubber tires is being produced by R. G. LeTourneau, Inc., Longview, Texas, for the Army. It will be the Army's largest rubber-tire land vehicle and will consist of 13 cars and be 560 feet long.

Each of the 54 independent drive wheels has a high-torque electric motor geared directly to its rim. Each electric wheel receives power through flexible electric cables; thus space and length limitations associated with mechanical power trains are virtually eliminated.

Units of the new train are a lead control car, ten 4-wheel cargo cars with a total capacity of 150 tons, and two power cars. An auxiliary generating plant is located in the control car to provide sufficient power for that car to propel itself and one cargo car, when detached from the rest of the train. Accommodations for a 6-man crew, controls for the entire train, and complete communications and navigation systems are located in the control car.

Four Saturn gas turbine engines, manufactured by Solar Aircraft Co., drive the generators. The engines, which develop more than 1,000 horsepower each, weigh 1,400 pounds.

One man at an electric console in the lead car will operate the train. Besides the driver, the crew will consist of an assistant driver-navigator and a radio man. Steering is by means of a single fingertip switch, which is flipped to the right or left according to the desired turning direction. Actually, only the two front wheels of the lead car are power steered; the other 52 track automatically through mechanical linkages.

Development of the new train has been accomplished through the joint efforts of LeTourneau and the Army Transportation Research Command at Fort Eustis, Va.

### Maryland 1960 road map

The State Roads Commission of Maryland has published the 1960 edition of Maryland's official highway map. A pictorial map is printed on the reverse side, showing the state's historical, scenic, and recreational areas.

## ESSICK VIBRATING COMPACTORS



### BACKFILL COMPACTION COSTS CUT IN HALF

"On part of this job involving a tremendous backfilling project of more than a dozen bridges, I would estimate," says Jack Yount, "that by using the VR-72 we doubled our production and cut our compaction costs by at least one-half."

### TOUGH FILL EASILY REACHES DENSITY IN 1 TO 3 PASSES

Jack Yount, Vice-president and General Manager of Vinnell Constructors states: "We really had a problem when we started compaction operations on the interchange of the new Golden State and San Bernardino freeways. The fill soil was composed of oil shale, a lightweight, light colored shale and black organic material, and in addition, moisture content was 10-15% over optimum. After many passes and long hours of rework, a Sheepsfoot roller reached density requirements calling for 90% on a modified AASHTO test.

"We had successfully used our company-owned Essick VR-54-T compactors in the past, but for this particular fill we chose their larger model VR-72-T. Used in conjunction with the Sheepsfoot Roller (to break up the clods), the Essick 72" vibrator brought the solid density to well above California State Requirements in from 1 to 3 passes.

*There is an Essick Vibrating Compactor especially designed to solve your particular compaction problems. The contractor who must achieve higher densities, meet rigid compaction costs and still make every equipment dollar count, relies on ESSICK.*



### ESSICK MANUFACTURING COMPANY

1950 Santa Fe Avenue  
Los Angeles 21, California  
850 Woodruff Lane  
Elizabeth, New Jersey

Affiliated with THE T. L. SMITH CO., Milwaukee, Wisconsin

For more facts, use Request Card at page 18 and circle No. 284

## Names in the News



Henry C. Boschen, president of Raymond International, Inc., and George F. Ferris, chairman of the board of directors of the company.



### ASCE section installs officers; confers award

Robert H. Dodds has been invested as president of the Metropolitan Section of the American Society of Civil Engineers. A project engineer at Gibbs & Hill, Inc., New York, N. Y., consulting engineers, he served the section last year as senior vice president.

Other officers of the society are

Robert H. Dodds, president of the Metropolitan Section of the American Society of Civil Engineers.



Malcolm Pirnie, Jr., vice president; Col. William J. Shea, retaining the post of treasurer; and Brother B. Austin Barry of Manhattan College, starting his third term as secretary. Raymond L. Brandes, Frederick S. Merritt, and Joseph M. DeSalvo have

joined the board of directors.

The Metropolitan Section has chosen John M. Kyle, Jr., as Metropolitan Civil Engineer of the Year. Chief engineer of the Port of New York Authority since 1947, Kyle has been responsible, during the past year, for engineering work on the new lower level of the George Washington Bridge, as well as on its complex approaches and nearby bus station. He is also responsible for new hangars and instrument runways at New York International Airport and for extensive construction at Port Authority piers in Brooklyn and Elizabeth, N. J.

### Raymond election news

George F. Ferris has been elected chairman of the board of directors of Raymond International, Inc., New York, N. Y. He succeeds Maxwell M. Upson, who will remain on the board as honorary chairman. Myron W. Krueger was elected vice chairman of the board.

Henry C. Boschen is the new president of the company. Vice president is Arthur Fertell.

### Moles elects officers

The Moles, an association of outstanding heavy-construction engineers and executives, has elected Chester W. Cambell its president. He is president and chief executive officer of The Foundation Co.



Chester W. Cambell, president of The Moles.

Harry T. Immerman, of Spencer, White & Prentiss, was elected first vice president; Eugene G. Rau, of J. Rich Steers, Inc., second vice president; Joseph B. Diamond, treasurer; Eugene F. Moran, Jr., of Moran Towing Corp., secretary; and H. Austin Van Name, of H. A. Van Name Engineering Co., sergeant-at-arms.

As president, Cambell succeeds Mansell L. MacLean, president of MacLean-Grove & Co., Inc.

### Burns & Roe elects

Judson G. Hyde has been elected treasurer of Burns & Roe, Inc., New York City engineering and construction firm. He will continue as controller and director of the finance division. Hyde was also elected to the firm's board of directors.

Prior to joining Burns & Roe last year, Hyde was treasurer-controller of Sperry Products, Inc.,

### Boring, tunneling firm appoints controller

Curtis L. Miles has been named secretary-treasurer and controller of Road Boring & Tunneling Co., the parent firm of the Bortunco group. Bortunco handles road boring, tunneling, and pipelines on a subcontract basis.

Dragline gets inspection from Keith Hutchison, Greer vice president and technical director, Phil Owen and Chuck Daub (l. to r.). Owen and Daub are Standard Oil lubrication specialists who render the school technical assistance on lubrication problems. Both have engineering degrees and both have completed Standard's Sales Engineering School. Daub has ten, Owen five years of field experience serving commercial customers.



## Standard Oil helps this school teach men how to keep a construction job going



Hutchison, Owen and instructor John Rolando watch student load 17-yard off-highway dirt hauler, one of school's 26 units.







W. A. Rose, executive vice president and general manager, Perini Corp.

### Perini elects executive

W. A. Rose has been elected executive vice president and general manager of the Perini Corp., Framingham, Mass. He will continue as president of Majestic Contractors

Ltd., Canadian pipeline member company of the Perini organization.

Rose became head of Majestic in 1956. It has laid hundreds of miles of pipeline in Canada for natural gas and oil. Two wholly owned subsidiaries of the company, Majestic Contractors, Inc., and Majestic Contractors International, Ltd., have handled work in the U. S. A. and overseas.

### Iron and Steel Institute elects slate of officers

The American Iron and Steel Institute, New York, N. Y., has elected officers for the coming year. B. F.

Fairless is president; Max D. Howell, executive vice president. Vice presidents are William M. Akin, Arthur B. Homer, and C. M. White. George S. Rose was elected vice president and secretary; Charles M. Parker, vice president of research and technology; and E. O. Sommer, Jr., treasurer.

### ASCE assigns to staff

John H. Fisk has been made assistant to the secretary of the American Society of Civil Engineers, New York, N. Y. He is being assigned to work with younger members, and with the society's network of student chapters.



Gordon W. Jones, assistant vice president and director of construction for M. W. Kellogg Co.

### Construction director appointed by Kellogg

Gordon W. Jones has been named assistant vice president and director of construction by the M. W. Kellogg Co., New York, N. Y., a subsidiary of Pullman, Inc. He will be responsible for all construction activities in North and South America, and for the development of construction methods for world-wide use.

### Trap Rock news

Milton E. Goul has joined the New York Trap Rock Corp., West Nyack, N. Y., as vice president in charge of research and marketing. He was formerly district engineer for the New York State Department of Public Works.

The company has named John J. Finegan director of purchasing and stores. Thomas S. Hurley has been made assistant purchasing agent. Trap Rock also appointed Wallace M. Dillon, Jr., as an electrical engineer and Denise L. Mills has been made assistant secretary of the corporation.

### Better Highways names director, vice chairman

The executive committee of the Better Highways Information Foundation, Washington, D. C., has named George M. Foster as full-time executive



George M. Foster, executive director of the Better Highways Information Foundation.

director. He was previously executive director of the Indiana State Highway Department.

H. D. Anderson, a past president of the Associated Equipment Distributors, was elected vice chairman of the foundation. The function of the organization is to provide information on the need for and benefits of better highways.

### Construction employers group elects treasurer

Samuel Simkin has been elected treasurer of the newly formed Construction Employers Congress of New Jersey. He served as acting chairman during the fifteen months while the group was organizing. Simkin is treasurer of Charles Simkin & Sons, Inc., S-T-M Supply Co., and Charles Equipment Co., Inc., and president of Associated General Builders, Inc., all of Hopelawn, N. J.

For more facts, use Request Card at page 18 and circle No. 285

## Greer Excavating and Mechanics School has learned one of the lessons it teaches—how to keep equipment in service

**Situation:** Time is money at Greer Excavating and Mechanics School, Braidwood, Illinois. The school promises its students hours of experience operating equipment. It teaches them how to maintain and service the machinery they work with. It also teaches the men how important it is to do the job right and on time.

**Equipment:** To 70 students, guided by nine experienced instructors, work 26 pieces of equipment almost every daylight hour, seven days a week, winter and summer. Bulldozers, scrapers, trucks, shovels and draglines must stay in service in spite of the rugged treatment they get.

**What was done:** From the first day of school more than three years ago, Greer Institute's equipment has been serviced exclusively with

Standard Oil gasoline, diesel fuel, motor oil and greases. No unit has ever been down due to lubrication failure or because of slow delivery. How come? Because Phil Owen, an experienced Standard Oil lubrication specialist from Joliet, just 20 miles from the school, makes regular calls to check out any lubrication problem. From Wilmington, only 5 miles away, Standard Oil agent R. J. Kavanagh makes deliveries of gasoline, diesel fuel, lube oil and grease as often as every other day. The school never needs to telephone for service.

**What you can do:** To get this kind of service call the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write, Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

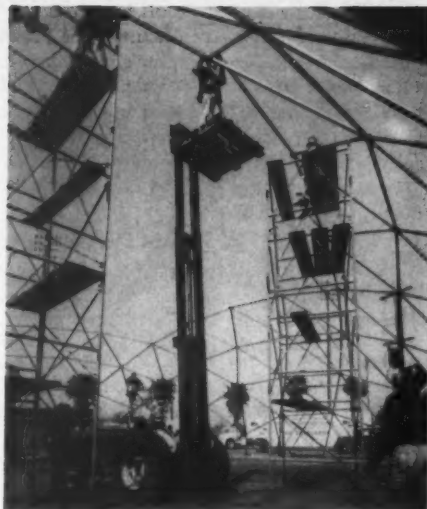


You expect more from **STANDARD** and you get it!

Plenty of dirt to work with. School site is on 1,700 acre tract that has been ripped, torn and piled as result of strip mining. Greer instructor, John Rolando teaches student how to use skid shovel.



A WORKMAN MAKING CONNECTIONS for the geodesic dome being assembled for the Ford "Cavalcade" show—a traveling unit displaying equipment of the Ford Tractor and Implement Division—works from a 21-foot mast fork-lift attachment on a tractor from the show. The "Cavalcade" is using the dome as a portable auditorium with room for 800 spectators.



Four Fuller-equipped scrapers lead the way for Hubbard Construction Company on roadbuilding, development and utility installation projects. Equipment includes one Euclid TS-24, a TS-14 and two S-12 Scrapers featuring Fuller 5-G-1220 Transmissions, and two LeTourneau-Westinghouse Tournapulls with Fuller L-1220s.

Geared by FULLER . . .

**"We get faster work cycles and longer life with countershaft brake and pressure lubrication systems."**

"Reliability, economy and serviceability are exceptionally important in purchasing new construction equipment," says J. C. Reddick, Vice President, Hubbard Construction Company, Orlando, Florida. "Fuller Transmissions meet the requirements for long life and fast work cycles that we must

have in our scraper operations."

Fuller's countershaft brake gives quick, easy upshifts without double clutching, keeps speeds up and cuts cycle time. The pressure lubrication and filtration system prolongs gear and bearing life.

For long life, easy shifting and pos-

itive lubrication in your scraper operations, specify Fuller Transmissions which include the countershaft inertia brake and pressure lubrication and filtration systems.

Ask your dealer about these features designed to put more profit in your operation.

**FULLER**

TRANSMISSION DIVISION  
MANUFACTURING COMPANY  
KALAMAZOO, MICHIGAN  
Subsidiary EATON Manufacturing Company

Unit Drop Forge Div., Milwaukee 1, Wis. • Skular Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.  
Automotive Products Company, Ltd., Automotive House, Great Portland Street, London W.1, England, European Representative  
For more facts, use Request Card at page 18 and circle No. 236

## Convention Calendar

### July 17-20 National Bituminous Concrete Association

Mid-year meeting, Concord Hotel, Kamesha Lake, N. Y. NBCA, Suite 218, 1119th St. N. W., Washington 6, D. C.

### July 18-22 Thin Shell Concrete Structures

Course, Case Institute of Technology, Cleveland, Ohio. Dr. John B. Sealki, associate professor of structural engineering, Case Institute of Technology, University Circle, Cleveland 6, Ohio.

### August 14-19 National Shade Tree Conference

Meeting, Statler Hotel, Boston, Mass. NSTC, Sec. Treas., L. C. Chadwick, 180 Neil Ave., Columbus, Ohio.

### September 6-8 New York State County Highway Superintendents Association

Summer meeting, Concord Hotel, Kamesha Lake, N. Y. Harry R. Mason, 144 Western Ave., Albany, N. Y.

### September 5-17 International Society of Photogrammetry

Congress, London, England. C. I. Palmer, American Society of Photogrammetry, 1515 Massachusetts Ave. N.W. Washington 5, D. C.

### September 11-16 Management Development Conferences

Conferences, California Institute of Technology, Pasadena, Calif. Management Development Center, California Institute of Technology, Pasadena, Calif.

### September 12-23 Fundamental Principles of Nondestructive Testing

Summer Conference Course, Ohio State University, Columbus, Ohio. Dr. Robert C. McMaster, Dept. of Welding Engineering, Ohio State University, 190 W. 19th Ave. Columbus 10, Ohio.

### September 15-16 Engineering Management Conference

Joint meeting of ASME and AIEE Hotel Morrison, Chicago, Ill. A. B. Collins, Jr., American Society of Mechanical Engineers, 29 W. 39th St., New York 18, N. Y.

### September 19-21 County Division of the American Road Builders' Association

Eighth Annual National Highway Conference, Atlanta Biltmore Hotel, Atlanta, Ga. Ben F. Ostergren, County Division ABRA, World Center Building, Washington 6, D. C.

### September 26-29 American Welding Society

Fall meeting, Penn-Sheraton Hotel, Pittsburgh, Pa. F. J. Mooney, AWS, 33 W. 39th St., New York 18, N. Y.

### September 27-30 Prestressed Concrete Institute

Sixth Annual Convention, Statler Hilton Hotel, New York, N. Y. Charles B. Kiesel, Jr., Raymond International, Inc., 140 Cedar St., New York 6, N. Y.

### Book on fundamentals of structural mechanics

A thorough treatment of structural analysis and theory is presented in a new book by Samuel T. Carpenter, "Structural Mechanics." Emphasis is placed on the use of mathematical procedures in the solution of structural problems, and many examples are included for study.

Intended as a text for undergraduate engineering students, the book covers numerical methods, finite difference approximations, buckling, beam-column action, and stability, in addition to many other aspects of structural mechanics. It may be ordered from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y., for \$9.50 a copy.

CONTRACTORS AND ENGINEERS



An Allis-Chalmers TS-260 scraper, one of four working on floodwater structures in Oklahoma, goes back to the borrow area after dumping a load. On a contract calling for six structures, all rigs stayed active, switching from one job to another.



## Six jobs done simultaneously keep scrapers on the move

Soil and water conservation is an expanding field in Oklahoma for small and medium-sized contractors, and Curtis Parton, Jr., has found a place in it. As part of the Little Deep Fork Creek Watershed improvement program, Parton is handling work on six floodwater retarding structures. His earthmoving fleet is never idle; if there is a delay at one site, the closeness of the structures allows him to move his equipment economically to the next.

Parton's firm, Earthmover's, Inc., Henryetta, Okla., holds a \$131,000 contract calling for the moving of about 250,000 cubic yards of earth. The contract also includes some land clearing and channel improvement.

### Earthmoving

The earthmoving is being taken care of by four Allis-Chalmers TS-260 motor scrapers. Two HD-16 crawler tractors are concentrated on dozing work. They are also used to pull sheepsfoot rollers and occasionally serve as pushers. Used principally for pushing is an HD-21 crawler, equipped with rear-mounted ripper. All of the fill grading is done by two Model Forty-Five motor graders, also used to maintain the haul roads from borrow to fill. Compaction of 95 per cent on the fill is achieved by disk and the use of sheepsfoot rollers.

Site No. 23, one of the six structures, is typical of Parton's job at Little Deep Fork Creek Watershed. To build it, the scrapers operated on a 4-minute, 2,500-foot cycle, with borrow being taken from the reservoir site to build the 52,000-cubic-yard structure. About 6,000 cubic yards of core excavation was necessary. The unit uses a drop-inlet system and a grass-covered emergency spillway. At the crest, it is 25 feet high, and it has a reservoir storage capacity of about 312 acre-feet, including floodwater detention area and sediment pool.

Little Deep Fork Creek Watershed covers 261.7 square miles of the central Oklahoma counties of Lincoln, Creek, and Okmulgee. As part of the 10-year program, 54 floodwater retarding structures are being installed, and the land is being improved by brush control, pasture planting, pond construction, and terracing. The program is expected to reduce annual flooding in the area from 41,626 acres to 21,637 acres. A 57 per cent drop is predicted in the cost of flood damage.

THE END



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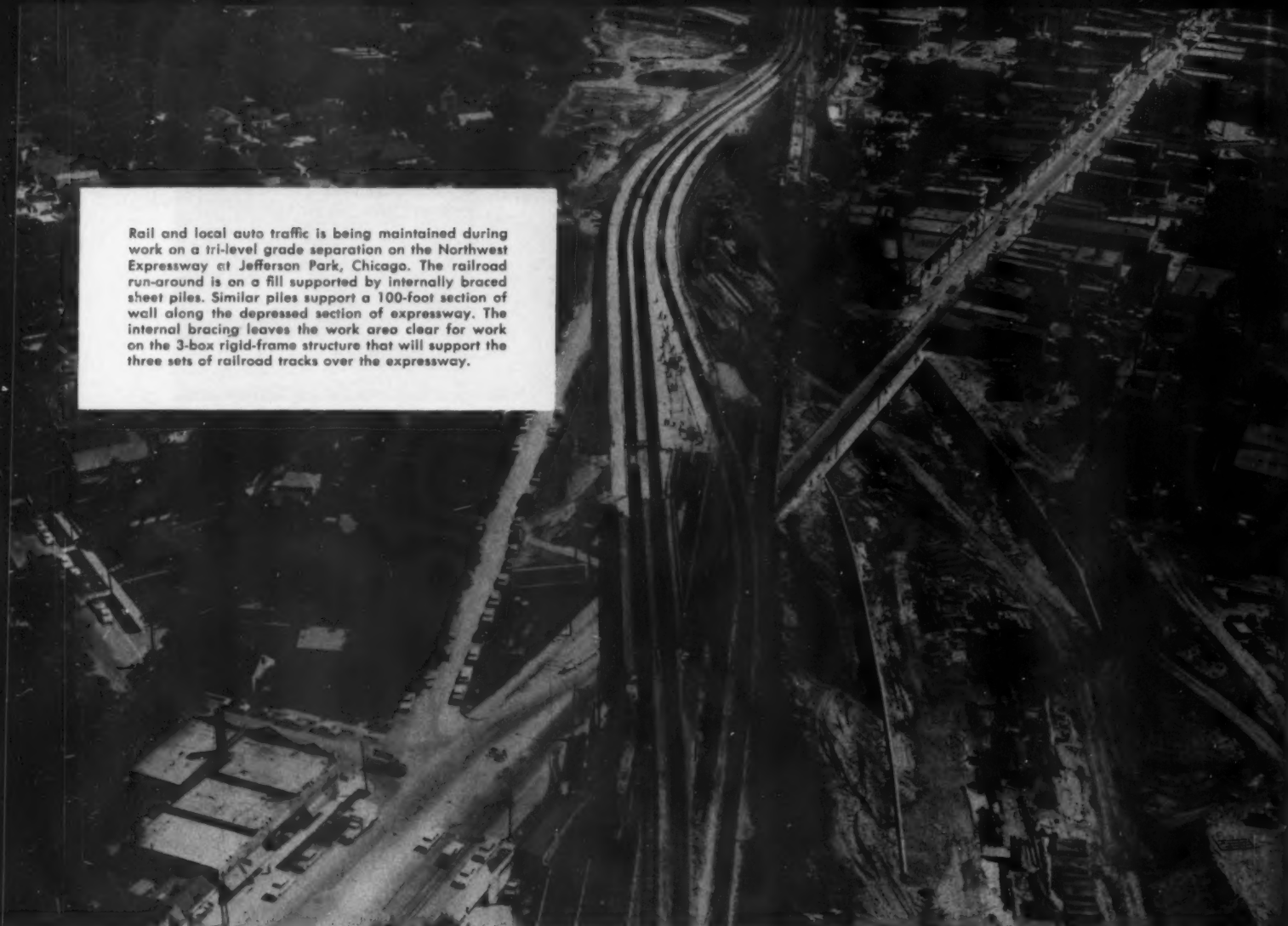
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Rail and local auto traffic is being maintained during work on a tri-level grade separation on the Northwest Expressway at Jefferson Park, Chicago. The railroad run-around is on a fill supported by internally braced sheet piles. Similar piles support a 100-foot section of wall along the depressed section of expressway. The internal bracing leaves the work area clear for work on the 3-box rigid-frame structure that will support the three sets of railroad tracks over the expressway.

## Tri-level grade separation shows New tricks with sheet piles

by BILL ALLEN, field editor



Designed and put together by general contractor Robert R. Anderson Co., Chicago, this drill rig handles drilling for some 2,000 friction piles that support the rigid-frame structure. Batter is adjusted by horizontal telescoping leads; adjustment is made by an air-powered hoist and cable arrangement. Hoist and drill are powered by portable equipment.

In a congested urban area, a 3-track railroad and a 4-lane city street angle across an expressway route at nearly the same point. The problem: Build two structures across the depressed expressway while maintaining both train and automobile traffic during the job.

The solution demanded careful, well planned construction in restricted working areas. On one side of the project, trains edged by the construction on an 1,800-foot run-around. On the other side of the work, 50-foot-high walls of sheet piling held back a cluster of commercial buildings.

The highway bridge was built in two stages so that automobile traffic was maintained across the expressway. While traffic flowed on two of the original lanes of the roadway, excavation was done for the other two

lanes to permit construction of the substructure for half the width of the bridge. As soon as this half of the bridge was completed, vehicles were routed across it and construction began on the other two lanes of the bridge.

### New tricks with sheet piles

In order to get maximum use out of the limited space, the contractor devised ingenious methods of bracing the sheet piling. Internal bracing held together the two sheet-pile walls that contained the earth fill of the railroad run-around. On a certain section of another wall, the sheeting was actually braced from the reverse side. The diagonal H-beam braces were driven and then bolted to the sheeting. This provided a clear area on the excavated side of the wall.

The project, expected to be com-

CONTRACTORS AND ENGINEERS

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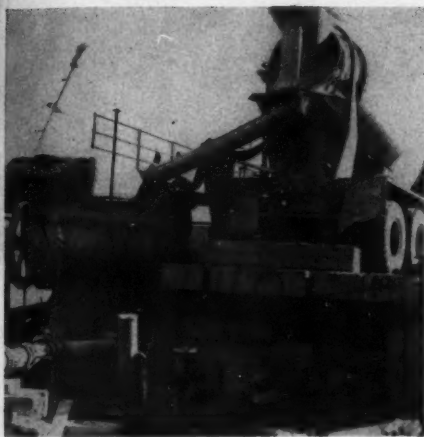
Cycrus-Erie 51-B buckets concrete from transit-mix trucks into the wall forms. Wood forming was used for the entire height of the 33-foot walls. They measure 3½ feet thick at base and 5½ feet thick at the top.



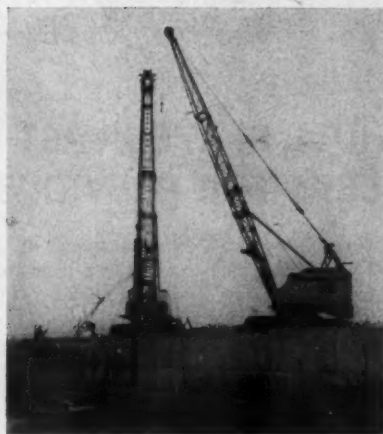
Two Blaw-Knox 32-foot-long form sections, towed by tractor, form each of the three barrels for the rigid-frame structure. This is the center barrel. Note the clear area beneath the form; with other methods, this area would be obstructed.



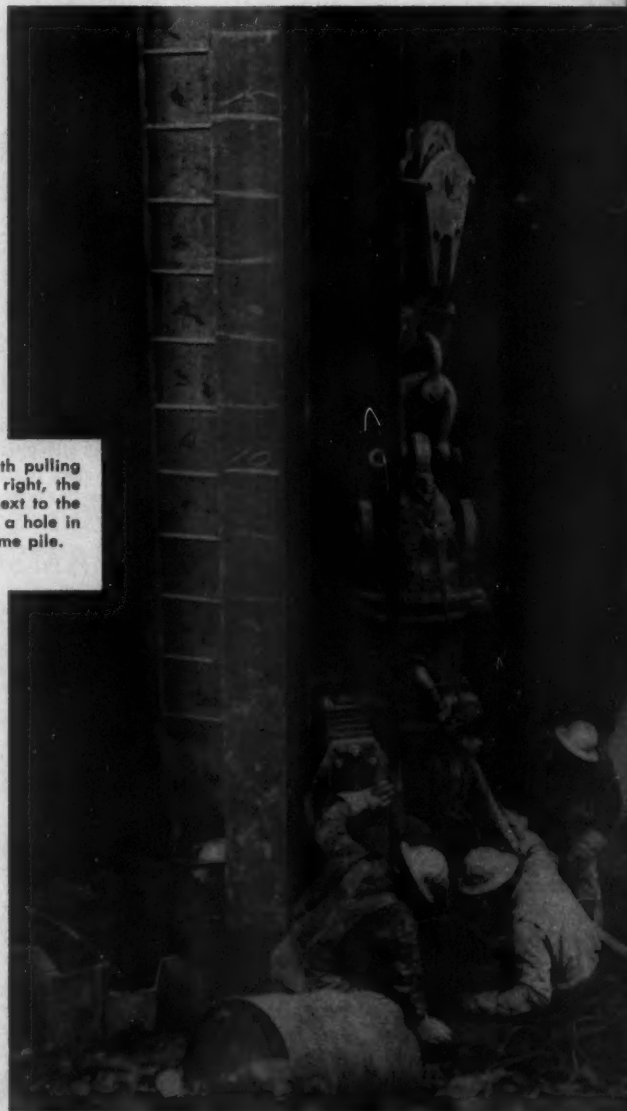
Internal bracing for part of a sheet-pile wall that runs alongside the triple-barrel structure eliminated the need for having block-outs at 10-foot intervals and made possible the use of traveling forms.



When concrete had to be placed in areas inaccessible by cranes, delivery was made with a Rex Pumpcrete machine. The transit mixer is chuting concrete to the hopper of the Pumpcrete. Some 1,220 yards of concrete was placed with the Pumpcrete and two 51-B's in a single 9-hour pour.



Above, sheet-pile extraction is done by a 51-B with pulling beam and a P&H 655 with Vulcan extractor. At right, the beam, of two 18-inch WF beams, rests on a pile next to the one being pulled. A block with 10-part line grabs a hole in the pile; the extractor grabs another hole in the same pile.



pleted in September, is a tri-level grade separation on the Northwest Expressway at Jefferson Park in Chicago, Ill. Robert R. Anderson Co. of that city holds the \$5 million general contract. The Cook County Highway Department is supervising the construction of the project, which was designed by Frank L. Ehasz, consulting engineer of Long Island City, N. Y.

#### Trains go over trains

The grade separation will unsnarl several different kinds of traffic. At the lowest level, the expressway will carry three lanes of southeast-bound traffic and three lanes of northwest-bound traffic. The two roadways are separated by a 36-foot median designed to contain two tracks of the Chicago Transit Authority. At the second level, a 250-foot-long rolled-

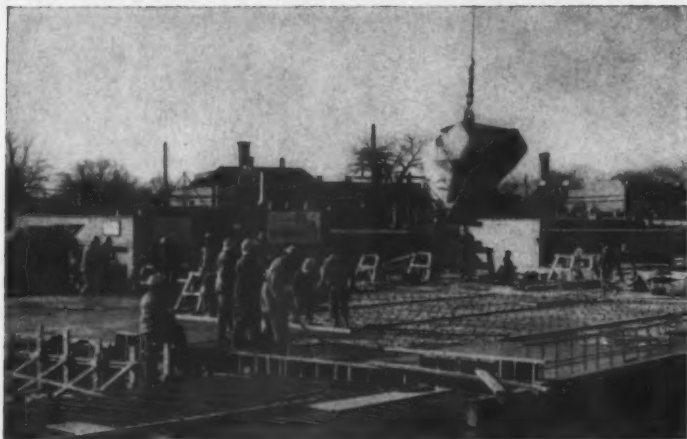
girder bridge carries the four lanes of Milwaukee Ave. over the expressway. At the third level, the three tracks of the Chicago & North Western Railway rest on a 3-barreled rigid-frame structure.

#### Internal bracing for run-around

Building the detour for the railroad was one of the first steps in the construction. Original plans called for most of the length of the run-around to be enclosed by two walls of sheet piles braced from the outside in the conventional manner. At the contractor's suggestion, the design was changed to permit internal bracing to be used.

With long rods holding the two walls together from within, there were no diagonal braces to obstruct work on the 3-barreled struc-

(Continued on next page)



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ture. If the braces had been set as planned, they would have penetrated the exterior wall of the structure at 10-foot intervals. This would have required forming block-outs in the wall around the H-beam braces. It would also mean that traveling forms could not be used to support the deck, for the braces would obstruct the legs of the traveling form.

#### Drive and fill

Most of the length of the run-around is enclosed by 50-foot lengths of Foster-rented sheeting. The sheet piles were driven to a depth of about 35 feet, leaving about 15 feet exposed above natural ground. Distance between the walls of sheet piling varied from 65 to 90 feet.

Since natural ground was several feet above the first level of bracing, a trench had to be dug from wall to wall before each rod could be positioned. The 3½-inch rods at 7-foot centers were fitted through holes cut in the piling. At the ends of the rods, nuts tightened on double channel wales. A trench dug along the outside of the wall permitted men to place the wales and adjust the nuts.

With the lower tier of bracing in place, trucks rolled in between the walls of sheet piling and dumped loads of fill dirt. The material was dozed in place and compacted with a sheepfoot roller up to the level of the second tier of braces. After these 2½-inch rods were set in place at 9-foot centers, the fill was placed and compacted in the remaining space between the two walls. Placing stone ballast, ties, and tracks completed this early phase of the project.

#### Reverse bracing

In excavating for the 3-barreled structure, equipment dug down alongside one of the sheet-pile walls of the run-around. On the opposite side of the excavation, it was necessary to drive another wall of piles to prevent a group of commercial buildings from tumbling into the hole. About 100 feet of this wall was braced from the reverse side; 50-foot-long 12-inch H-piles were driven at a 45-degree angle. The top ends of the H-piles were positioned so that they could be welded to 18-inch channel wales bolted to the top of the sheeting. With the braces in place, 40-foot sheets were driven to form the wall.

The channels were then bolted to the sheeting and later welded to the braces.

There was plenty of tension on the braces: of the ¾-inch bolts holding the channel to the sheeting, about half of them popped. The smaller bolts were replaced by 1½-inch bolts able to stand the strain. With the sheeting braced from the reverse side, the inside of the excavation was clear for construction of the out-

A laydown bucket swings concrete to crews on the deck of the structure. The solid arched deck slab is 7 feet thick at the ends and 4 feet thick at the crown. Concrete was placed the entire 64-foot width of the deck.

side wall of the 3-barreled structure.

#### Special drill rig for piles

About 2,000 friction piles support the rigid-frame structure. A special rig, put together by Robert R. Anderson Co., was used to drill for the 16 and 20-inch cast-in-place piles. Mounted on a P&H 655 crane, the 50-foot H-beam leads carry an electric-powered auger-type drill. The angle of the leads is controlled by telescoping bottom brace. Power for this action is supplied by an air-driven hoist. Electricity for the drill motor is supplied by a generator stationed alongside the crane.

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*How AMSCO screen parts and Simplex\*  
2-Part Dipper Teeth are giving  
users greatly improved service life*

## AMSCO CHUTE PLATES LAST 5 YEARS VS. 4 WEEKS FOR PREVIOUS TYPE

In the screen house of this quarry, two Amsco HC-250 abrasion-resistant chute plates are used on each Hi-G discharge screen. 500 tons per hour pass over each plate, during the two-shift, 20-hour operating day.

This installation resulted from a previous test, in which a set of Amsco plates was compared with regular carbon steel plates. The Amsco Chute

Plates lasted about 5 years, whereas the competitive plates had to be replaced every 4 weeks.

The quarry operator reports that the Amsco plates presently installed are holding up excellently in service. Their exceptionally long life and trouble-free service means big dollar savings—through elimination of costly shutdown time.

## AMSCO SIMPLEX 2-PART TEETH DIG 40,000 YARDS OF ROCK BEFORE REPLACEMENT

At the right, you see the type of rugged rock excavation in which this outstanding service record was set. It's part of the Niagara Power Project—Conduit #2 South—being handled by Gull & Defelice Construction Company.

All dippers on the job are equipped with Amsco Simplex 2-Part Reversible Teeth. They operate 16 hours a day, 6 days a week—handle approximately

40,000 yards of rock—before tooth replacement is required.

In addition to their exceptionally long wear, the fact that Simplex Teeth can be replaced in ten minutes with no trouble is an important advantage to the operators. It all adds up to big savings—in replacement cost and shovel downtime.

\*Patent No. 2,904,508

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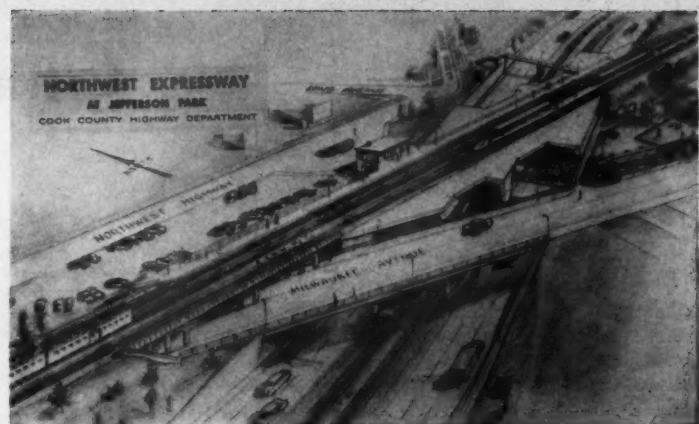
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The cast-in-place piles rise to a footing that supports the 33-foot-high battered walls of the 3-barreled, rigid-frame structure. The joint between the wall and the footing is designed to allow for a slight movement of the structure. The top of the footing, much like a ball-and-socket joint, is formed to fit the rounded bottom of the wall. V-shaped dowel steel rises from a central line in the footing to spread out into the wall. The walls—3½ feet thick at their bases and 5½ feet thick at the tops—were formed for the entire height. Sturdy wood forms were used to complete a maximum 78 feet in one pour.

**Traveling forms for deck**  
With the walls up, the contractor went to work on the solid arched deck. Varying in thickness from 4 feet at the crown to 7 feet at the base, the deck spans about 50 feet over the two roadway tunnels, and 35 feet over the Chicago Transit Authority tunnel.  
Blaw-Knox traveling steel forms were selected as the most economical method of forming the deck. The contractor made use of two 32-foot-long traveling form sections for each of the three barrels. There was no need to shift the heavy forms from one barrel to another. With wheels rest-



This sketch of the completed project shows how rail and highway traffic intersect at almost the same point on three different levels. The project, being constructed at a cost of about \$5 million, is scheduled for completion in September of this year.



Left: Close-up of Amsco Chute Plates used on each discharge Hi-G screen.  
Right: General view of Hi-G screen in screen house of large New England quarry.



ing on the footings, forms were pulled by tractors from one end of a structure to the other. When the forms were in position, the weight was taken off the wheels by adjustable screw jacks. Since the forms were supported only at their sides, they provided plenty of room so that equipment could move through.

**Fast deck work**

Most of the concrete placement was handled in 64-foot-wide sections for the entire three spans of the structure. On one deck, 1,220 cubic yards of concrete was placed in nine hours by two Bucyrus-Erie 51-B cranes, with 1½-yard buckets, and a Rex Pumpcrete machine.

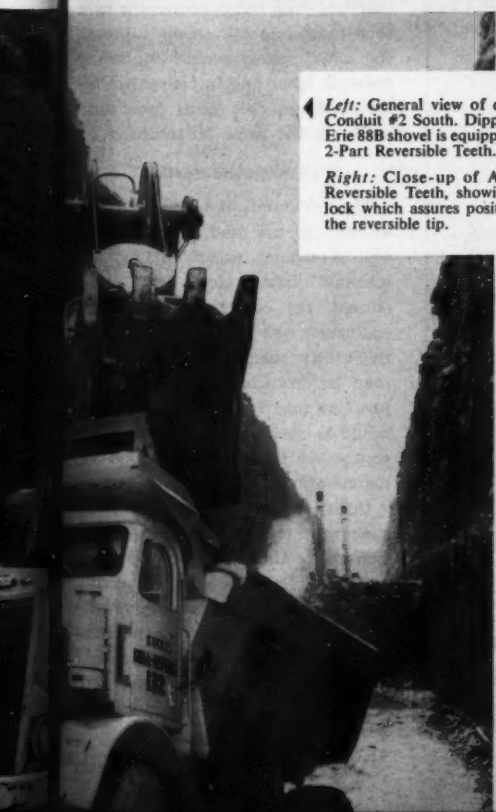
To complete the unusual structure, the flat deck received in successive layers: (1) a warping slab for drainage; (2) a 5-ply membrane; (3) protective planking; (4) stone ballast; (5) ties and tracks.

**Bridge built in halves**

Construction of the Milwaukee Avenue bridge was planned so that traffic could cross the expressway at all times. In order to do this, only two lanes of the original roadway were cut out at one time.

To start construction, a row of sheet piles was driven down the center line of the road. Material on one side of the sheeting was excavated down to the grade of the expressway. While traffic flowed on two lanes of the original roadway, half the width

(Continued on next page)



Left: General view of excavation at Conduit #2 South. Dipper on Bucyrus Erie 88B shovel is equipped with Amsco 2-Part Reversible Teeth.  
Right: Close-up of Amsco 2-Part Reversible Teeth, showing special pin lock which assures positive locking of the reversible tip.



Lee Hild, left, project engineer for the contractor, and Walter Kinnucan, engineer for the Cook County Highway Department, refer to a model of the structure to clarify some details.

For more facts, use Request Card at page 18 and circle No. 288

(Continued from preceding page)

of the rolled-girder bridge was completed. Then traffic was switched to the bridge, and excavation was started for the remaining width of the bridge. Specifically designed for this method of building, the structure resembles twin bridges built up against one another.

#### Field personnel

Superintendent James Jun got the job started for Robert R. Anderson Co., and Neil Hennegan is getting it finished. Lee Hild is the project engineer. For the Cook County Highway Department, Walter W. Potokar is the resident engineer. Walter Kin-nucan and James Jernstad are field engineers.

THE END

## Home-office planning guides field work

Vice president Ernie Hennings, one of four office engineers for Robert R. Anderson, and head of the group, works on an estimate. Among other things, behind-the-scenes planning by these men resulted in a money-saving design change and helped keep the job going through the steel strike.



Building the structures of the tri-level grade separation at Jefferson Park is a lengthy and complicated job. It demands not only the skill of the men in the field but also the good judgment and guidance of the men in the office.

Both before and during construction, key men in the contractor's office plan the scheduling of the work and decide upon cost-cutting methods. They keep material flowing into the job. They design forms. They draw up the plans for the driving of sheet piles. A large part of the job's success depends on their work.

#### Design change saves money

Early planning involved a design change on the manner of bracing the sheet pile-supported fill carrying the railroad runaround. The engineers in the office decided it would be more convenient to brace the two walls of sheeting with internal tie rods than to use external bracing. Elimination of the diagonal braces that penetrated the wall of the 3-barreled rigid-frame structure made it possible to use traveling forms for the deck. The design change had to be drawn up and then approved by the Cook County Highway Department. This preliminary planning took time, but in the long run it proved to be a money-saver.

Several different methods of forming the deck of the 3-barreled structure were considered, but use of the traveling steel forms proved the most economical and convenient. Although the initial cost was high, the money saved in labor and in convenient access through the forms more than made up the price difference.

#### Underground meeting

The relocation of utilities on Milwaukee Avenue had to be planned well in advance. At an "underground meeting" held before construction started, the contractor, the county engineers, and representatives from the utility companies and the railroad sat down together to figure out just how and when the various lines would be moved. At the meeting, the contractor furnished copies of his planned-progress schedule.

Utility companies had to coordinate their work closely with the construction of the Milwaukee Avenue bridge, for some of the lines passed directly beneath the bridge and others were carried by the girders. Each of the five utility companies furnished the crew for moving its own line.

Another aid to job planning was a  
(Continued on page 58)

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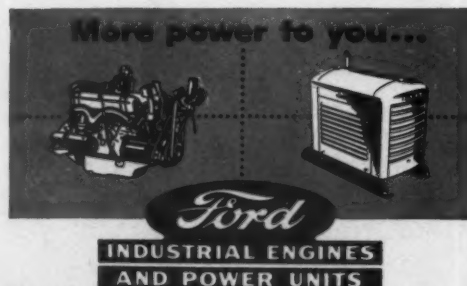
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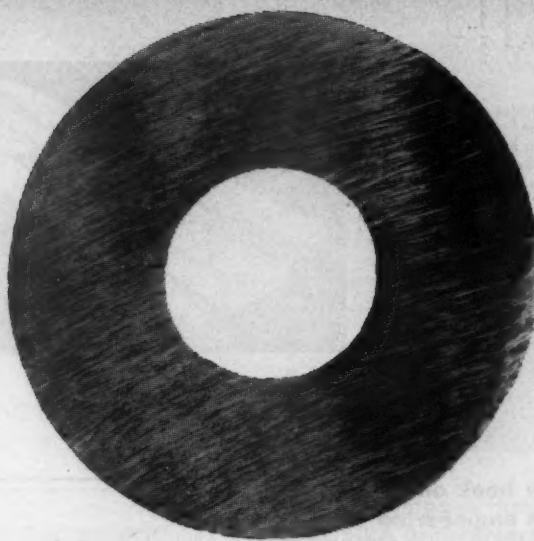


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Cross section of average extension steel, showing distorted center hole.



Cross section of Sandvik Coromant Steel, showing perfectly uniform center hole.

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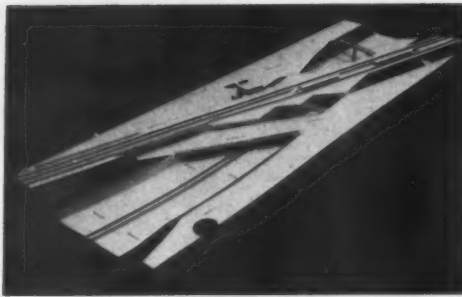
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For more facts, use Request Card at page 18 and circle No. 290

This scale model of the tri-level grade separation being built on the Northwest Expressway in Chicago by Robert R. Anderson Co., is a big help when field supervisors and office engineers get together to discuss the work at a weekly meeting. Removable bridge decks are a feature of the model, which was also used for a company public relations display.



### New book on soils, soils engineering

■ "Soils and Soil Engineering," by Reuben H. Karol, gives a thorough analysis of problems encountered in modern soil mechanics, with illustrations, charts, and problems worked out to demonstrate theories. Subjects covered include formation of soils, sampling, testing, stabilization, and chemical grouting.

The 216-page book is intended as a reference for the practicing engineer and soils scientist, as well as a text for students. Copies may be obtained at \$11.65 each from the publisher, Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y.

### AGC disaster relief plan wins merit award

■ For its Plan Bulldozer, a disaster relief program, the Associated General Contractors of America has won the Award of Merit from The Chamber of Commerce of the United States. The plan provides simple and effective guide lines for quickly mobilizing the equipment and trained personnel of the construction industry to ward off disaster or fight its after-effects.

Developed by the national AGC Disaster Relief Committee, the plan is designed for implementation by the association's autonomous chapters and branches throughout the country. More than 30 chapters have adapted the plan for local use. Six of them were chosen to participate with civil defense authorities in Operation Alert, 1960, conducted in May.

Last year the plan was put to the test for the first time when the Montana Contractors Association was called upon in the wake of earthquakes and landslides in Yellowstone Park. The chapter's prompt action protected many lives and removed the threat of serious flooding.

### HRB bibliography

■ The Highway Research Board has published a bibliography entitled "Density, Absorption and Specific Gravity Tests of Aggregates, Bituminous Materials, Bituminous Mixtures and Surfaces." It lists and reviews available literature on the subject, from 1847 to the present time.

Bibliography 25 may be obtained for 60 cents from HRB, 2101 Constitution Ave., Washington 25, D. C.

scale model of the complicated project. Built by a professional model maker for about \$2,000, the model was useful in acquainting field supervisors with the layout during early stages of the construction.

When field men came to the home office for weekly construction meetings, the model helped clarify much of the talk. The model also had a bonus value, for it helped the contractor improve his relations with the public. For several weeks, the wood model was displayed in a Chicago bank.

### Stockpiled steel beats strike

Keeping materials flowing into the job as they were needed was another responsibility of the home office. By anticipating the steel strike, the purchasing agent was able to buy up and stockpile about 1,000 tons of steel before the mills shut down. The steel kept the work moving through the long strike.

"Planning and coordination from the home office is important to the success of a field job," says Ernie Hennings, chief engineer and vice president of the company. "We like to

# 28" EUCS"

## BUILDING 11 MILLION YD. EARTH-FILL DAM

30 YD. BOTTOM-DUMPS ON LONG, HIGH SPEED  
GRAVEL HAUL...REAR DUMPS HANDLE BIG ROCK LOADS

Hills Creek Dam in western Oregon is part of the Willamette Valley Project under construction by the Corps of Engineers to provide flood control, navigation, power and irrigation. The embankment will require 11 million yards of earth and gravel fill and is scheduled for completion in 1961... it will be 2,400 feet in length and will have a maximum width of 1,600 feet at the base and 24 feet at the crest.

Green-Tecon, a joint venture of Green Construction Co., Des Moines, Iowa, and the Tecon Corporation of Dallas, Texas, have the earthmoving contract. These contractors are using a fleet of 28 Euclids on this big job... 13 Bottom-Dumps of 30 yd. and 7 of 17 yd. struck capacities and 8 Rear-Dumps of 22 and 27-ton capacities. The big "Eucs" work two ten-hour shifts six days a week... have marked up an excellent record of productive capacity and job availability.

Whether your operations involve big earthmoving projects like this one or small grading, stripping and industrial work, there's a Euclid model to match your requirements. Get all the facts and figures on the modern Euclid line of crawler tractors, scrapers, rear-dump and bottom-dump haulers from your Euclid dealer.



Six 27-ton and two 22-ton Rear-Dump "Eucs" haul rock from the quarry to the fill... all of these units are equipped with Torquematic Drives and Torquematic Brakes.

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plan a job all the way through before construction starts, but often this is not possible. On underground jobs, such as this one, we sometimes run into difficulties that change our plans. To keep the job running smoothly, we have weekly construction meetings here at the office. Generally, the man that has figured the bid heads up the meeting. We get together with the field supervisors and discuss any problems that may have come up. We check job costs. We plan the work for the coming week."

Robert R. Anderson Co. is not a

large-volume contractor, but it is noted for the quality of its construction. Headed by president Ralph R. Anderson, the Chicago-based company does between \$8 million and \$10 million worth of work each year, primarily in highway construction. The engineering department consists of four men, with Ernie Hennings as chief. These men figure the bids and do the design work for the construction. Through their efforts, the work in the field moves along much more smoothly.

THE END

J. Gerald Phelan, president of Fletcher-Thompson, Inc., Bridgeport, Conn., cuts the company's 50th anniversary cake. Looking on is columnist Bob Considine, the guest speaker at the celebration.



### Fletcher-Thompson firm marks 50th anniversary

■ The architectural and engineering firm of Fletcher-Thompson, Inc., Bridgeport, Conn., celebrated its 50th anniversary recently with a luncheon at the Waldorf-Astoria Hotel in New York City. President J. Gerald Phelan was host to about 500 executives from many parts of the country.

The firm is moving in September from 211 State St. to larger quarters at 279-299 Washington Ave. An addition to the remodeled building it will occupy has precast, tilt-up concrete wall panels, a system pioneered and developed in the East by Fletcher-Thompson.

### High-speed compaction subject of Hyster film

■ A new 12½-minute color film, "Hyster High-Speed Compaction," released by the Tractor Equipment Division of Hyster Co., Portland, Ore., outlines the development of the firm's DW20A compactor and Model D compaction rollers.

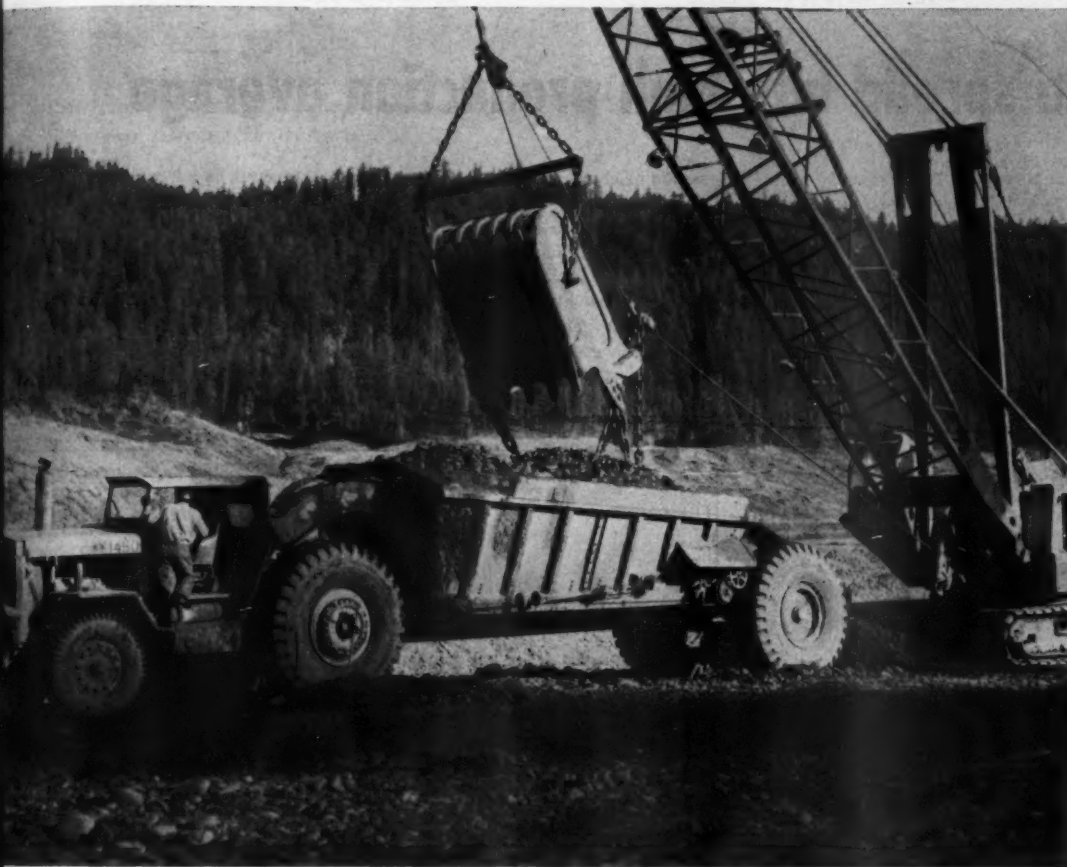
It also points out how fast compaction equipment can reduce job costs, comparing the operation of a DW20A tamping compactor with that of a five-by-five sheepsfoot roller, pulled by a Cat D8 tractor. Under equal conditions, the DW20A shows a cost of 2.1 cents per cubic yard, less than half the 4.3 cents per cubic yard incurred with the sheepsfoot roller.

Further information may be obtained from any Hyster-Caterpillar dealer, or from the Hyster Co., P. O. Box 328, Peoria, Ill.

### Free booklet tells uses of blast-furnace slag

■ The many uses of blast-furnace slag are described in a 4-color booklet, "USS Granulated Blast Furnace Slag," prepared by United States Steel Corp. Applications of this type of slag are described in such fields as the manufacture of cement, construction of highways, concrete masonry units, landscaping, and general construction. Its advantages as a sub-base for highways and general construction are detailed.

The booklet is available free of charge from Slag Products Section, U. S. Steel Corp., Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.



A 7½ yd. dragline loads a Model LDT Bottom-Dump Euclid with 40 yds. of river gravel for 2½ mile haul to the fill. Green-Tecon have 13 of these big "Eucls" that are powered by 12 cylinder GM diesel engines of 432 h.p. with Torqmatic Drive.



Big loads of heavy gravel move over good haul roads at fast travel speed in these Bottom-Dump "Eucls". Torqmatic Drive—torque converter and semi-automatic transmission—provides full-power shift and a smooth flow of power to meet all road and grade conditions on the 5 mile cycle.



Well-maintained haul roads enable the Rear-Dumps to utilize their fast travel speeds on the 4500 ft. rock haul. On downgrades that are a maximum of 15% Torqmatic Brakes provide positive control of speed.



## EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

For more facts, use Request Card at page 16 and circle No. 291



A Koehring using a strike-off leads the train that paves more than 3,500 feet daily of Cross Westchester Expressway in New York State.



After reinforcing is placed atop 6 inches of concrete, a Ransome dumps ahead of a Blaw-Knox spreader that trims the mix to its 9-inch depth.



A full-width vibrator on the rear of the Blaw-Knox spreader consolidates the concrete across the 12-foot surface of the slab.

## Concrete spread hits high production average

Paving of over 3,500 linear feet of 12-foot-wide, 9-inch-thick concrete paving, every 8-hour day, was average for Merritt-Chapman & Scott Corp., New York, N. Y., on a \$14 million 4.62-mile stretch of the new Cross Westchester Expressway. When completed late this year, the new artery will run through Westchester County, New York, and link the New England

and New York Thruways.

M-C&S started work on the two 36-foot roadways with only one paver, a Koehring 34-E, and averaged about 2,000 linear feet of paving per 8-hour day. After a few months, a second paver, a Ransome, was brought to the job to increase production and maintain a smooth paving sequence in case of a breakdown in a paver. With the

second machine, production increased to an average of 3,500 linear feet a day. The best single day's production has been 4,000 linear feet in only 8 hours.

The Koehring lead paver rides outside the 9-inch steel forms as it dumps the concrete batches on the grade. A strike-off, riding on the forms and pulled by the paver, trims

the concrete to a 6-inch thickness so that welded reinforcing wire mesh can be placed.

The second paver then dumps concrete over the reinforcing and in front of a Blaw-Knox spreader. This rig rides the forms and trims the slab to its 9-inch thickness as it vibrates the mix with a rear-mounted, full-width vibrator.

### Standard Steel Model 658

## Road-a-Mite

combines both  
ECONOMY and PERFORMANCE



### A Mighty Road-Builder with TODAY'S COMPACT CAR DESIGN!

On the working end of the Model 658 is a newly designed 12' full-circulating spray bar. Turn-up ends provide for additional sections up to 24' in length. Mechanical lateral shift and hydraulic vertical adjustment are standard.

The Model 658 provides the small community with equipment at a small investment so that they can more easily protect a larger investment in roads and streets. This compact new unit also provides the small city or beginning contractor with adequate means for blacktop construction work. The Model 658 provides low-cost secondary support to operators of the bigger pressure distributors.



OTHER PRODUCTS OF STANDARD STEEL  
ASPHALT DISTRIBUTORS . . . BURNERS . . . POWER AND TRAIL-  
VIA DRIVEN CONSTRUCTION BROWS . . . MAINTENANCE  
DISTRIBUTORS . . . TAN KETTLES . . . AGGREGATE SPREADERS  
SHELVING HARDWARE . . . PIPE LINE EQUIPMENT . . . SUPPLY TANKS  
AND AGRICULTURAL EQUIPMENT

Standard Steel Works, Inc. NORTH KANSAS CITY, MO.

For more facts, use Request Card at page 18 and circle No. 292



## CONCRETE FLOATS



float concrete five times  
faster than by hand

—make finishing concrete easy. 3600 instantly controllable vibrations per minute do the hard work of floating concrete. Permit the use of drier mix for stronger, more durable concrete. One man can do the work of five.

SYNTRON Floats are powered by a pulsating electromagnet — eliminating gears, belts, motors, etc., assuring long, dependable, trouble-free operation with low maintenance costs.

Write today for detailed literature

### SYNTRON COMPANY

227 Lexington Ave.

Homer City, Penna.

Other SYNTRON Equipment of proven dependable Quality



GASOLINE  
HAMMERS



VIBRATORY FEEDERS



CONCRETE VIBRATORS

For more facts, use Request Card at page 18 and circle No. 293

CONTRACTORS AND ENGINEERS



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A Jaeger double-screed self-widening transverse finisher follows the spreader; behind it comes a Blaw-Knox double-screed transverse finisher. Merritt-Chapman & Scott is handling paving of the 36-foot lanes.



Bringing up the rear of the train is this Koehring longitudinal floating machine. A finishing crew touches up the fresh concrete in the lane with hand lutes. Average daily production on the project was about 3,500 linear feet.

### Contractor on expressway in New York relies on conventional lineup of rigs

The spreader is followed by a new Jaeger self-widening, double-screed transverse finishing machine and a Blaw-Knox transverse finisher. Two finishers are required by state specifications. A Koehring longitudinal floating machine follows the pair of finishers to smooth off the slab's surface and remove the transverse ridges

(Continued on next page)

Working in advance of the paving train is a Buckeye subgrader that rides the 9-inch steel forms as it trims the grade ahead of a roller.



## 'Man, That KOLMAN Sure Puts It Out!'

### 50'x42" KOLMAN Model 101

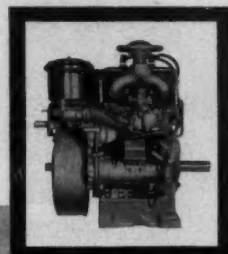
Wherever you see a Kolman Model 101 Conveyor-Screen Plant in operation, you're seeing top screening and loading production. For handling sand, gravel, crushed rock and other material, it takes a KOLMAN to really make the job pay off!

In less than a minute the 42" loads out 20-ton trucks, the 36" loads out 15-ton trucks. And the KOLMANs keep up this pace under the severest operating conditions without a grumble.

Available in 18" to 48" belt widths, the KOLMAN's heavy construction is capable of carrying single, double or triple-deck screens without additional support. What's more, they're mighty attractively priced!

Write for Literature and Prices  
**KOLMAN MANUFACTURING CO.**  
4922 W. 12th St., Sioux Falls, S.D.

these rugged  
**WISCONSIN ENGINES**  
are tailored to help  
flatten fill and costs!



VIBRATORY IMPACTORS — made by Seaman-Gunnison Corp., Milwaukee, Wis. — pack a 13-ton impact wallop at amplitudes up to two inches. Units are powered by 18-hp Model THD Wisconsin Engines.

Few, if any, applications are as rough on engines as vibratory compactors. That is why most builders and users of compactors and other construction equipment power their equipment with Wisconsin Engines — like the 18-hp Model THD units shown.

The engines are built to give the most power service with the least care on the toughest construction jobs. They are precision-fitted for smooth-firing power with minimum wear. Their built-in load-lugging power prevents stalling under shock loads. And they are air-cooled. You have no dry-up, freeze-up, water or anti-freeze

to worry about—nor radiators, water pumps, fan belts, etc.

What's more, Wisconsin service is only a phone call away—whether your job is local or miles from nowhere. There are close to 2000 Authorized Wisconsin Engine Service Stations you can count on for fast, expert parts and repair service. They'll restore your Wisconsin to like-new condition.

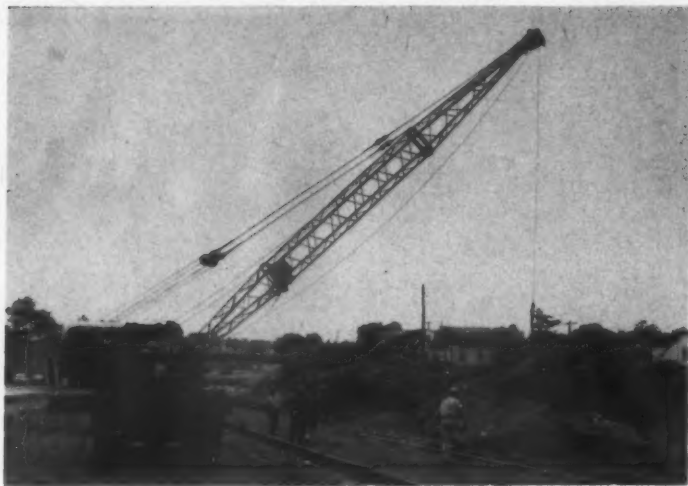
If you want the most on-the-job service from your equipment, power it with Wisconsin heavy-duty air-cooled Engines — 3 to 56 hp. Electric starting is available for all models. Get Engine Bulletin S-251 and Service Station Directory S-198. Write Dept. C-20. 0-320



**WISCONSIN MOTOR CORPORATION**  
MILWAUKEE 46, WISCONSIN  
World's Largest Builders of Heavy-Duty Air-Cooled Engines

For more facts, use Request Card at page 18 and circle No. 294

For more facts, use Request Card at page 18 and circle No. 295



A converted "Euc" bottom-dump pulled by an A-C tractor carries 4,000 gallons of water for the second paver. A similar rig supplies the first. At left, a Lorain truck crane spots welded-wire reinforcing along the edge of the roadway for the paving crews that will follow.

## PROPER Pre-Shipment TESTING Assures PROFITABLE PERFORMANCE in the Field....



**I**N addition to undergoing exacting tests for mechanical operating efficiency, each GALION Motor Grader, before shipment, receives a thorough engine operation and analysis check on a Clayton Dynamometer.

As a result downtime in the field, due to "new equipment" adjustments and tuning, has been reduced to a negligible point.

The tests and adjustments are made according to scientific standards. Guesswork, opinions and uncertainties are eliminated. You are assured a grader on which all mechanical parts function properly and the engine delivers top horsepower and speed with utmost fuel economy.

The grader is first tested and adjusted in its highest gear at full throttle for smooth operation with no load. Next the road speed and horsepower are checked under a full load condition. The Dynamometer operator easily controls the load or changes it at will by two remote control buttons.

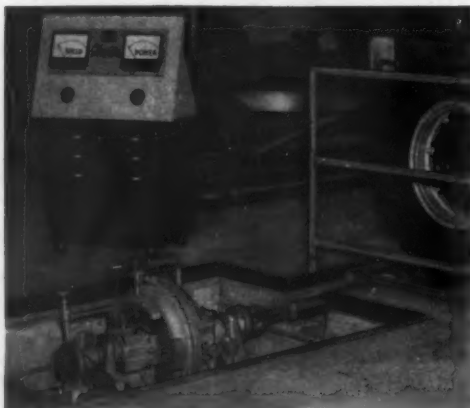
Speed and torque measurements are electrically integrated, permitting horsepower readings to be shown directly on a large meter without computations being necessary. A matching electric meter shows road speeds in mph regardless of the tire size or rear axle ratio.

For profitable performance—buy GALION! See your Galion Distributor or write direct to The Galion Iron Works & Mfg. Company, Galion, Ohio, U. S. A.

For more facts, use Request Card at page 18 and circle No. 296



After an initial warm-up period, the grader is moved into place with its tandem drive wheels resting on the Dynamometer testing rolls.



Working conditions are simulated by imposing loads on the Dynamometer rolls thru a closed hydraulic power absorption system.

(Continued from preceding page)

left by the finishers. Aluminum hand lutes are used to finish off the slab. Concrete is covered with Sisakrat curing paper for at least 4 days.

### Water supply

Water for the pavers is supplied by two contractor-built water tankers. Both are converted Euclid bottom dumps—one with a 3,500-gallon capacity, the other with a 4,000-gallon capacity—pulled by Allis-Chalmers and Euclid scraper tractors. Each tanker body also has a rear-mounted spraybar that was used to wet down haul roads during the roadway excavation.

The tankers are supplied from a 7,000-gallon-capacity elevated tank which is kept filled with water pumped from a nearby lake. A third and smaller tanker is used as a standby to permit the converted tankers to refill at the elevated tank.

### Forms and grade

M-C&S is equipped with about 10,000 linear feet of 9-inch forms. Forms are kept a minimum of 2,000 linear feet ahead of the paving train. Form stakes are driven with an air hammer powered by a 105-cfm compressor. The forms are stripped the day after concrete is placed, picked up by hand, and moved ahead of the paving train to be reset.

Once the forms are in place, M-C&S uses a Buckeye subgrader to trim the grade ahead of the tandem wheel roller compacting the grade.

Colonial Sand & Stone Co., Inc., New York, N. Y., supplies the concrete mix to M-C&S from a commercial batch plant located in Port Chester, N. Y. Colonial uses about 14 batch trucks, each with a 6 or 7 batch capacity, to deliver the dry mix to the pavers.

Jack Donovan is the project manager; Roger Chapman, the project engineer; and Charles Harris, the paving superintendent for Merritt-Chapman & Scott. **THE END**

More than one-fifth of the 41,000-mile Interstate System is open to traffic, Federal Highway Administrator B. D. Tallamy reports—with an increase of 1,285 miles from January 1 to March 31.



# PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

## New convertible crane-excavator features 9-ton lifting capacity

A fully convertible crane-excavator—the Model 14-B—has been introduced by the Bucyrus-Erie Co.

As a crane, it is rated up to 9-ton capacity and is available with booms from 25 to 80 feet long and boom-jib combinations up to 85 feet. As a hoe or shovel, it can be equipped with  $\frac{1}{2}$  or  $\frac{3}{4}$ -yard dipper-pers; as a dragline-clamshell, it handles buckets ranging up to  $\frac{3}{4}$  yard in capacity.

For heavy-duty excavation or crane work, the crawlers can be augmented by four optional screw-type jack outriggers said to boost standard crawler capacities by at least 15 per cent.

Components such as the swing circle, hoist shaft, and horizontal swing shaft are unit assemblies, permitting quick service or easy replacement. Manual controls for the upper works are combined with air controls for steering clutches and brakes, plus quick-shift spline-type clutches for fast, easy selection of swing or propel motion. For further information write to the Bucyrus-Erie Co., Dept. C&E, South Milwaukee, Wis., or use the Request Card at page 18. Circle No. 39.



## Self-propelled sheepfoot roller for dam and highway work

The Model SP-3DT self-propelled sheepfoot tamping roller is announced by Bros, Inc.

The new machine weighs 81,000 pounds empty and has an uninterrupted rolling width of 15 feet 9 inches. Three 130-hp diesel engines drive the roller's three drums. Speeds from 1.5 to 7 mph in both forward and reverse eliminate turn-arounds at the end of a course.

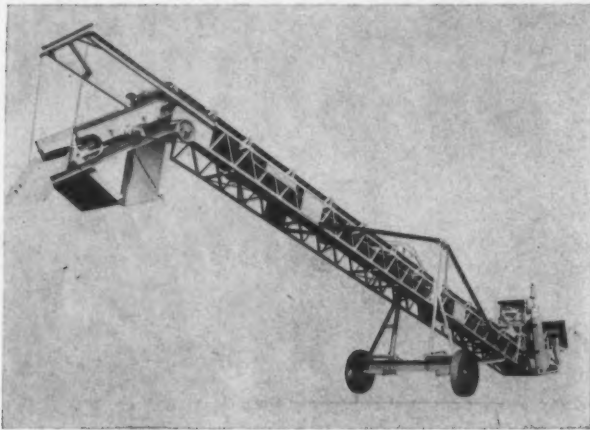
Each drum oscillates to provide uniform compaction pressures. Drums are 5 feet in diameter and 5 feet wide. Tips of the tamping feet are replaceable when worn.

The roller has torque-converter drives with power-shift, 3-speed, full-reversing transmissions.

Over-all dimensions of the SP-3DT are: length, 29 feet 6 inches; width, 17 feet 10 inches; and height, 11 feet 6 inches.

For further information write to Bros, Inc., Road Machinery Division, Dept. C&E, 1057 Tenth Ave. S.E., Minneapolis 14, Minn., or the Request Card at page 18. Circle No. 89.





Completely portable and featuring simplified design, this Lippmann conveyor-screening plant reportedly can produce 50 yards of aggregate per hour.

#### Conveyor-screening plant is completely portable

A new and improved portable conveyor-screening plant has been announced by the Lippmann Engineering Works, Inc.

Combining reciprocating feeder, conveyor, and vibrating screen, the entire unit can be transported from one location to another without dismantling.

Both engine and drive are located at ground level, a feature said to offer these three benefits: (1) Increased

concentration of weight at tail end of conveyor improves balance and stability, eliminates need for ground support pole, and gives unobstructed loading area under screen; (2) ground-level location of engine saves time and effort for start-stop, throttle control, refueling, and maintenance; and (3) extended-drive linkages to head-end pulley are eliminated.

The new design is available with either bulldozer feeder trap or wheel hopper to accommodate overhead charging. The continuous-flow reciprocating feeder has five feed settings.

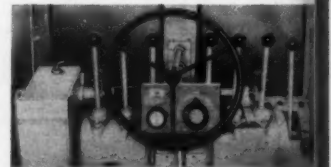
The manufacturer states that under average conditions, clean, close-sized aggregate can be produced at the rate of 50 yards per hour or more.

For further information write to the Lippmann Engineering Works, Inc., Dept. C&E, 4603 W. Mitchell St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 61.

#### Automatic blade control on motor-grader line

The Preco all-transistor Dial-A-Slope automatic blade control is now available for installation on the LeTourneau-Westinghouse line of motor graders. According to the manufacturer, the system can easily be installed on any new or used current model of L-W grader.

To put the Dial-A-Slope control in operation, the operator merely (1) switches on the control, (2) sets the specified degree of slope on a dial, (3)



turns a lever to select the end of the blade he wants to have under automatic control (usually the heel), and goes to work. From then on, until he changes the setting on the dial, the automatic control electronically maintains the blade at the exact slope.

The grader's ability to reach extreme bank sloping positions and do all normal motor-grader operations is said to be unhampered by installation of the Dial-A-Slope control. For operator convenience and to assure maximum accuracy in setting and controlling slope angle, controls are located on a separate panel in the center of the cab directly in front of the operator.

For further information write to the LeTourneau-Westinghouse Co., Dept. C&E, 2301 N. Adams St., Peoria, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 93.



## PARTNERS IN PERFORMANCE

Save Work and Speed the Job  
With This **NAYLOR**  
Pipe and Coupling Combination

NAYLOR Spiralweld pipe and Wedgelock couplings work together to save you time, effort and money for lines in construction service.

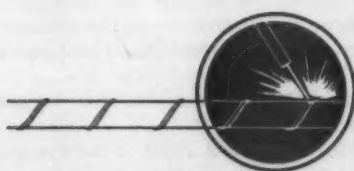
Because NAYLOR pipe is light in weight, it is easy to handle and install. The distinctive lockseamed-spiralwelded structure makes pipe stronger and safer for the tough jobs you want done.

There's savings in time and work, too, when you use NAYLOR Wedgelock couplings because they are designed for faster, easier, more economical installation.

For air, water or ventilating service, you can depend on this NAYLOR combination. Just ask for Bulletin No. 59.



The NAYLOR Wedgelock coupling makes a positive connection, securely anchored in the standard weight grooved ends. A hammer is the only tool needed to connect or disconnect it.



# NAYLOR PIPE Company

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

For more facts, use Request Card at page 18 and circle No. 297



Designed specifically for use on Michigan tractor shovels, the new backhoe reportedly can be snapped on or off in less than a minute without tools.

### Snap-on backhoe offered for tractor-shovel line

A new Michigan Snap-Mount backhoe attachment for Models 55A, 75A, and 85A tractor shovels is announced by the Construction Machinery Division of the Clark Equipment Co.

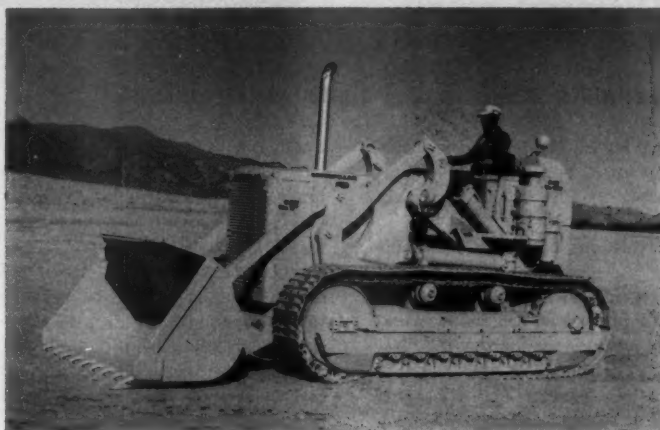
The fully hydraulic unit can be snapped onto or off of a tractor shovel in less than a minute without tools, according to the manufacturer.

Other major features include 180-degree continuous swing and 180-degree bucket tilt. The unit also features a 12-foot 4-inch digging depth,

10,000-pound breakaway at the bucket teeth, and 15-foot 6-inch reach from center rotation. A counterbalance is included for use when the hoe is disconnected.

The new Michigan unit will take a variety of buckets, states the company.

For further information write to the Construction Machinery Division, Clark Equipment Co., Dept. C&E, 2407 Pipestone Road, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 49.



### Concrete core drill comes in three models

A new core drill is announced by the Clipper Mfg. Co.

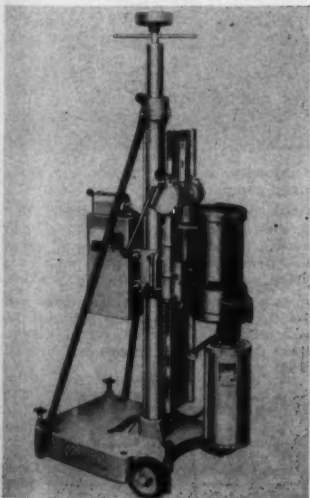
Designed to drill through masonry, stone, refractories, and steel-reinforced concrete, the unit features an induction-type motor with direct drive to the spindle. A gear reducer with oversize hardened steel gears can take repeated abuse. Further, a gear ratio is used that permits the motor itself to operate at low speed.

Full directional drilling, in which the drill head can be rotated 360 degrees on a sturdy 3-inch tubular steel column, permits drilling at any angle with the base of the drill remaining securely on any horizontal surface.

Additional features include a load indicator that indicates the optimum drill pressure and operating speed at all times; built-in motor-overload protection by means of a magnetic-type protector that automatically shuts off the motor when subjected to prolonged overloading or improper voltage supply; and exceptional ease in raising or lowering the drill head.

These drills are available in three models: the Model D-30, for holes with diameters up to 14 inches; the Model D-20, for holes up to 6½ inches; and the DH-20, a hand-held drill for holes ½ inch to 2 inches.

For further information write to the Clipper Mfg. Co., Dept. C&E, Suite 149, 2800 Warwick, Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 73.



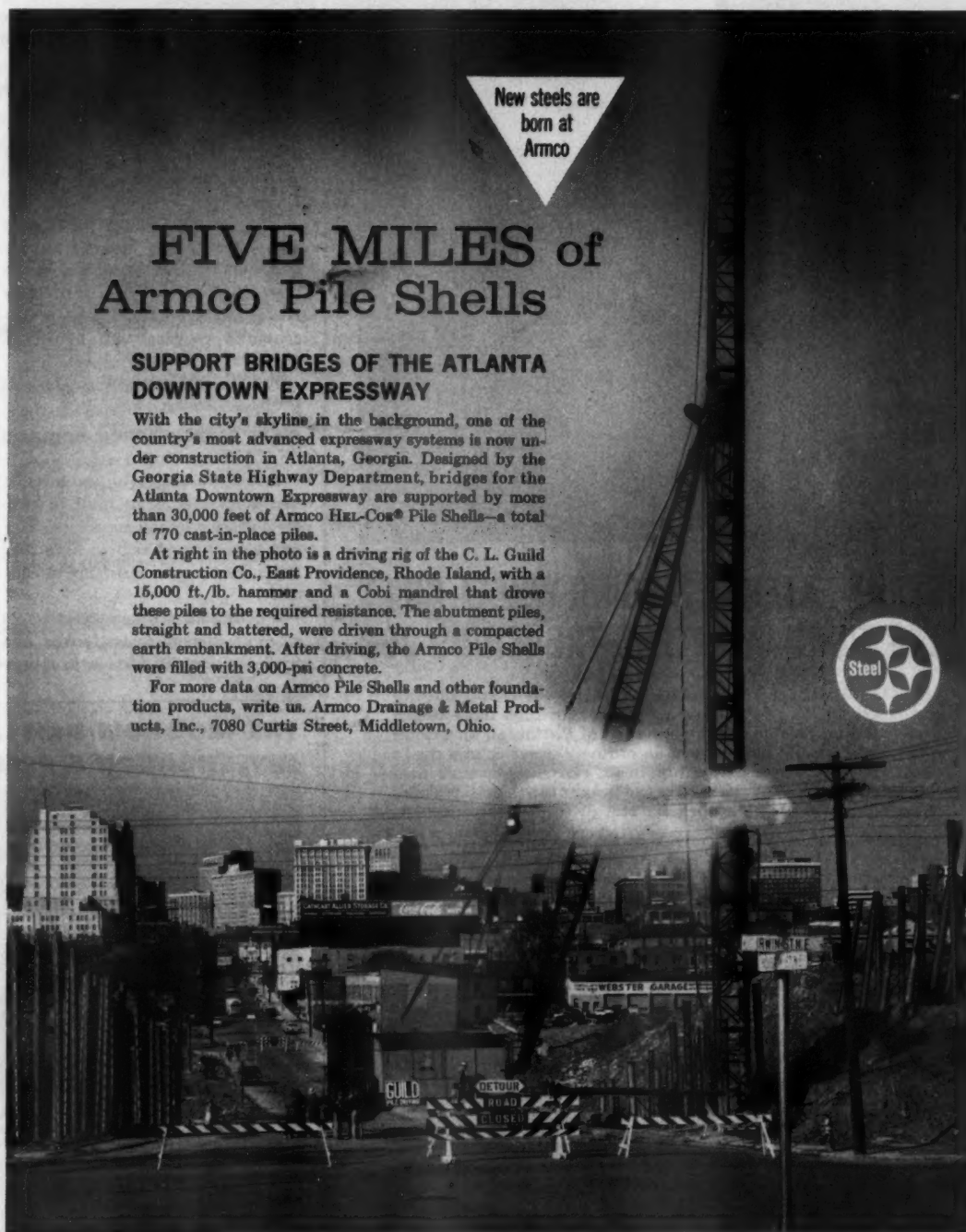
## FIVE MILES of Armco Pile Shells

### SUPPORT BRIDGES OF THE ATLANTA DOWNTOWN EXPRESSWAY

With the city's skyline in the background, one of the country's most advanced expressway systems is now under construction in Atlanta, Georgia. Designed by the Georgia State Highway Department, bridges for the Atlanta Downtown Expressway are supported by more than 30,000 feet of Armco HEL-Cor® Pile Shells—a total of 770 cast-in-place piles.

At right in the photo is a driving rig of the C. L. Guild Construction Co., East Providence, Rhode Island, with a 15,000 ft./lb. hammer and a Cobi mandrel that drove these piles to the required resistance. The abutment piles, straight and battered, were driven through a compacted earth embankment. After driving, the Armco Pile Shells were filled with 3,000-psi concrete.

For more data on Armco Pile Shells and other foundation products, write us. Armco Drainage & Metal Products, Inc., 7080 Curtis Street, Middletown, Ohio.



## ARMCO DRAINAGE & METAL PRODUCTS



**Subsidiary of ARMCO STEEL CORPORATION**

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation

For more facts, use Request Card at page 18 and circle No. 298

## Material-handling lift has 1,500-pound capacity

The Model GA-15-H, new 1,500-pound-capacity HoisTower, is announced by the Buck Equipment Corp.

On this unit, floor stops are simply set at the proper point on the cable so that the platform will stop at any of four preselected heights. A special safety lock prevents moving the platform while loading or unloading.

The new machine has a hoisting speed of 100 fpm, is trailer-mounted, and is self-erecting to a height of 45 feet. Additional tower sections are

available in 5 and 10-foot lengths.

The Model GA-15-H has an improved planetary-type transmission and can be powered with either 9 or 12-hp gasoline engines or electric motors. Electric starting, platform safety devices, and controls for the 45-foot erecting height are included as standard equipment.

For further information write to the Buck Equipment Corp., Dept. C&E, 720-X Anderson Ferry Road, Cincinnati 38, Ohio, or use the Request Card at page 18. Circle No. 25.



## INSTANT LATERAL DIGGING WHEEL SHIFT LICKS TIGHT-QUARTERS TRENCHING JOB

THE CLEVELAND JS-30 TRENCHER, with instant lateral shifting and power tilting of its digging wheel, got high daily trench production for McShane Contracting Co. of Pittsburgh on a water line job that would have slowed an ordinary trencher to a snail's pace. The trench had to be dug in an extremely narrow road shoulder hemmed in by poles, trees and heavy growth on side slopes rising sharply within less than six feet of the pavement's edge.

Able to dig behind either crawler or anywhere within its 6-foot width, the JS-30 easily dug past the obstructions in the narrow shoulder. Lateral position of the crawlers was changed as necessary to get by obstructions, while the JS-30's digging wheel was power-shifted laterally, keeping trench digging right on line. Power-tilting of its digging wheel allowed the JS-30 to dig straight vertical trench with one track higher than the other on the side slopes, without blocking or cribbing.

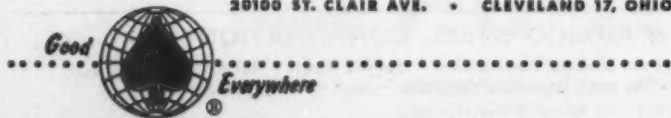
### THE JS-30—A TRENCHER OF AMAZING UTILITY

- Digging wheel power-shifts 5' from side to side
- Excavates bell holes, saves on trench width
- Digs trench flush with parallel pavement, curbs, etc.
- Digs 11"-24" wide, to 5½' deep; digs to 6' wide with power-shifting of wheel
- Digs trench virtually flush with trees, poles, fences, etc.
- 100% control of all operations at operator seat.
- Digs vertical trench on side slopes, cuts blocking, cribbing

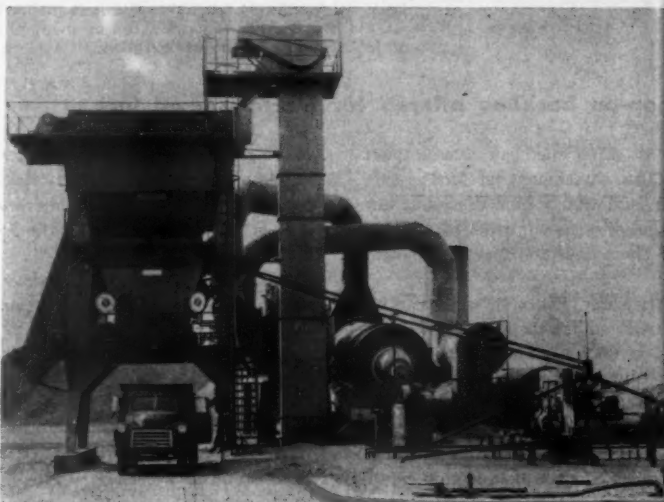
Get the complete story on the JS-30 from your distributor

**The CLEVELAND TRENCHER Co.**

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO



For more facts, use Request Card at page 18 and circle No. 299



This plant is the heavy-duty Standard R-M design, which now includes sizes ranging from 2,000 to 8,000-pound batch capacities.

## Offer new asphalt plant with 8,000-pound capacity

An 8,000-pound-batch-capacity asphalt plant is available from the Standard Steel Corp.

Known as the Model R-M, the plant is equipped with the Standard "super-lift" dryer, said to provide maximum capacity because more aggregate is exposed longer to more heated air. The entire dryer is a self-contained package with individual power.

The Model R-M 8,000-pound plants

are available with the firm's new cyclonic wet-washing system, said to assure added dust collection. Also available is the Standard Simplex fingertip batching control featuring instantaneous cutoff.

For further information write to the Standard Steel Corp., Road Machinery Division, Dept. C&E, 5001 S. Boyle Ave., Los Angeles 58, Calif., or use the Request Card that is bound in at page 18 of this issue. Circle No. 65.

## New epoxy-based compound for flooring, patching

E-bond No. 1005 is an epoxy-based compound that welds itself to concrete flooring or any masonry surface and gives a bond said to have four times the abrasion resistance of concrete.

E-bond 1005 can be applied to old or new concrete, wood, ferrous and nonferrous metal, and virtually any

firm surface. It is said to be exceptionally resistant to acids, alkalies, and solvents.

For further information write to the International Epoxy Corp., Dept. C&E, 501 N. E. 33rd St., Fort Lauderdale, Fla., or use the Request Card that is bound in at page 18 of this issue. Circle No. 94.

## THE IROQUOIS DAM... AN S & H FOUNDATION INVESTIGATION & PRESSURE GROUTING PROJECT



Thousands of feet of drilling and sampling were performed for the initial planning of the Iroquois Dam (St. Lawrence Seaway). The accurate soil samples and high quality rock cores recovered contributed materially to the design of a suitable and firm foundation.

In the second phase of our work on the Iroquois Dam we drilled the necessary grout-holes and performed the pressure grouting. Completely sealing off the cavities that our drilling revealed required

the injection of over 10,000 cu. ft. of cement grout.

Sprague & Henwood's unbeatable combination of experienced drilling and grouting personnel, modern equipment and expert supervision is your assurance of the satisfactory completion of your work.

For the foundation investigation and pressure grouting required for tunnels, buildings, dams, bridges, or highways, contact the Sprague & Henwood branch nearest you.

**SPRAGUE & HENWOOD, Inc.**  
SCRANTON 2, PA.



New York—Philadelphia—Atlanta—Pittsburgh—Grand Junction, Colo.—Buchanan, W.Va.

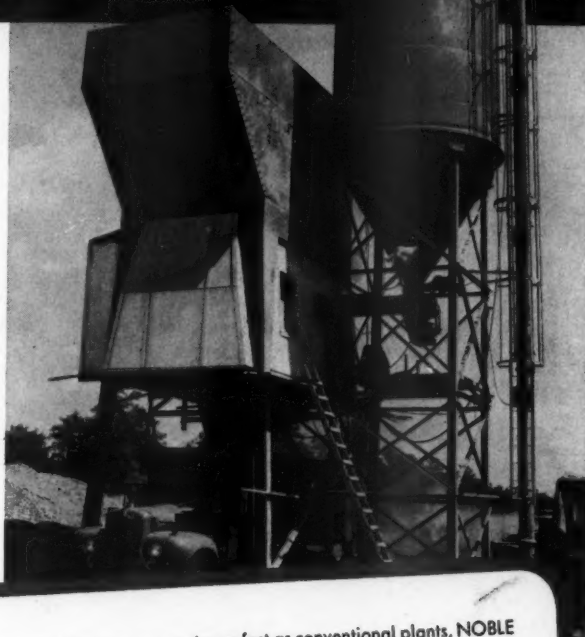
For more facts, use Request Card at page 18 and circle No. 300

CONTRACTORS AND ENGINEERS



# Mile-a-day highway paving record set with NOBLE 3B concrete batching plant

5,394 feet of highway paving setting a new 1-day record was supplied entirely by NOBLE 3B concrete batching plant. Two dual drum pavers pouring concrete every 30 seconds on relocation of Rhode Island Routes 2 and 3 depended on an uninterrupted flow of aggregates and cement. The 1150 batches required were batched and discharged by NOBLE 3B on schedule without a hitch! With overhead aggregate storage of 150 tons and separate overhead cement storage of 500 barrels, NOBLE 3B high speed output kept 8 dry batch trucks hauling materials in a steady stream to the paving site 7 miles away. Of all batching plants familiar to the contractor, **Campanella & Cardl**, in its ready-mix concrete division, NOBLE 3B was selected for highest productivity, consistent quality and reliable, economical operation.



**3 batchers (2 for aggregates, 1 for cement) weigh materials simultaneously for a single batch.**

Batching quality concrete over twice as fast as conventional plants, NOBLE 3B keeps pace with fast-moving paving jobs. Sub-assembled at factory, it is transported rapidly to job site and quickly erected with no outside purchase of essential components or extensive field assembly and wiring. A pair of 3B plants set up as a dual twin-driveway single-stop plant for air-field construction when highest output is required can later be split into 2 complete plants for separate highway paving jobs in 1-stop or 2-stop set-ups controlled by a single operator.

**NOBLE**

Write for Brochure  
B-285  
Noble Company  
P.O. Box 1979  
Oakland 4, Calif.

**NOBLE COMPANY • 1860-7TH ST., OAKLAND, CALIF. • TEMPLEBAR 2-6785**

CLEVELAND

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For more facts, use Request Card at page 18 and circle No. 301



7,000 hours on graders without a breakdown..

## GULF MAKES THINGS

Highway construction on Maryland's John Hanson Expressway can be tough on equipment, reports Regal Construction Company of Forestville, Md. Snow or rain turns the clay topsoil to a bottomless slush. In dry weather, the ground hardens to the consistency of cement.

"When you're fighting terrain like this," explains Chief Mechanic Harry Hann, "7,000 hours of trouble-free operation on graders is quite an accomplishment."

Actually, Regal has been getting similar dependable

service from all their equipment. They have to. The Maryland late snows of last winter, and a September construction deadline, make every minute of downtime a minor emergency. So far, a carefully planned P. M. program, based on Gulf engineering recommendations, has kept equipment operating at top performance.

"To make sure it stays that way," Mr. Hann tells us, "we change oil every two weeks, or 100-120 hours, and do a complete grease job every ten hours." Regal

Gulf  
find  
gum  
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"Gul  
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Left to right: Rocco Luppino, President of Regal; Fredrick Pope, Jr., Gulf Sales Engineer; Harry Hann, Chief Mechanic; Dom Luppino, Vice-President. Gulf field engineering assistance is always as close as your telephone.

Regal President Rocco Luppino always directs operations right in the field. His insistence on a thorough P. M. program has paid off in equipment performance. Says Mr. Luppino: "We'd rather buy oil than new engines."

wn..

## GSRUN BETTER!

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gram, based  
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Hann tells  
20 hours, a  
." Regal

Gulf® Super-Duty Motor Oil and Gulf® diesel fuel. "We find that Gulf fuel is low in sulfur content and is free of gum and water," says Mr. Hann.  
On your next job, find out for yourself how quality fuels and lubricants, properly used, can cut costly mechanical delays and help you get greater yardage. Call your nearest Gulf office. For your free copy of the 88-page "Gulf Contractors Guide" — the lubrication and maintenance manual for heavy equipment — mail this coupon.



### GULF OIL CORPORATION

Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.  
Please send copy of "Contractors' Guide."

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

GO-9-3239



Breaking pavement



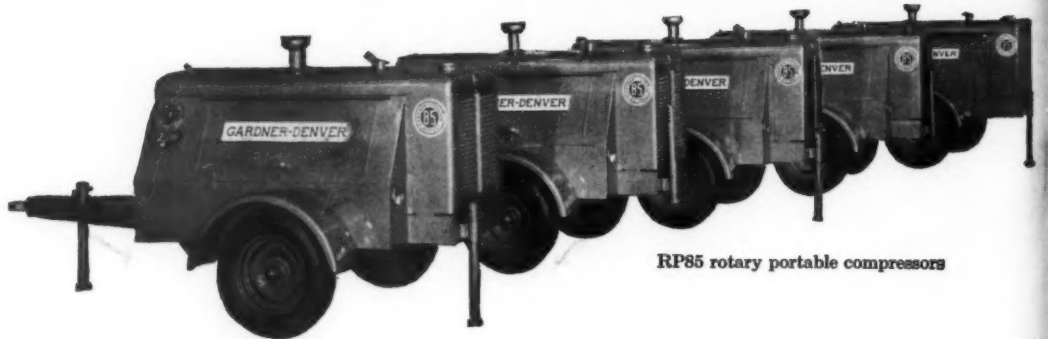
Digging



Tamping backfill



Cutting asphalt



RP85 rotary portable compressors

## MOVE IN, SET UP AND FINISH FASTER... WITH GARDNER-DENVER AIR POWER AND TOOLS

Gardner-Denver RP85 rotary portable compressor is a compact work horse... delivers 85 cfm. Jacklegs speed setting up. Towing hitch for road travel. Ample tool storage. Easy on fuel... easy to maintain.

Fast-acting Gardner-Denver air tools are money-makers. Ruggedly built to stay on the job. A complete line from paving breakers to concrete vibrators. Write for bulletin or see your Gardner-Denver distributor.



EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

# GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

For more facts, use Request Card at page 18 and circle No. 303





On the 2½-cubic-yard 977H Traxcavator, a new hydraulic system is said to reduce cycle time as much as 20 per cent and to provide 41 per cent greater lifting capacity. A full line of attachments is available.

### New tractor-excavator offers more productivity

A new track-type Traxcavator equipped with power-shift transmission is announced by the Caterpillar Tractor Co.

Powered by a new, compact, turbo-charged diesel engine, the 977 Series H is rated at 150 horsepower. A 2½-cubic-yard bucket is now standard, replacing the former 2¼-yard bucket.

Single-lever shifting during all phases of the work cycle is permitted by the new power-shift transmission. The master clutch has been eliminated.

Operators can choose between a high and a low work range, each of which has two gear speeds forward and reverse.

A new hydraulic system reduces the bucket cycle time and delivers greater lifting force, states the manufacturer.

Forward speeds are: low range, 0 to 1.9 mph and 0 to 3.6 mph; high range, 0 to 2.5 mph and 0 to 4.6 mph. Reverse speeds: low range, 0 to 2.5 mph and 0 to 4.4 mph; high range, 0 to 3.1 mph and 0 to 5.7 mph.

The 977 Series H has a hydraulic breakout force of 25,500 pounds, and will lift 17,000 pounds to maximum height.

A full line of attachments, including the high-production side-dump bucket, is available.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 48.

### Diamond cores cut holes 14 inches in diameter

A new line of diamond hole saws is announced by the Robert G. Evans Co.

With standard heavy-duty drills or special coring machines, it is possible to core holes in any masonry wall, floor, or ceiling, states the manufacturer. Cores are available for hole sizes from ½ inch to 14 inches in diameter.

For further information write to the Robert G. Evans Co., Dept. C&E, 6030 Troost Ave., Kansas City, Mo., or use the Request Card at page 18. Circle No. 15.

JULY, 1960

### Announce new additions to steel-building line

Armo Drainage & Metal Products, Inc., announces a new line of pre-engineered steel buildings.

Clear-span widths are reported to range from 5 feet 4 inches up to 120 feet; side walls up to 40 feet. In addition, there is a new series of buildings with a single-slope roof, and in widths up to 24 feet.

A new choice of roof slopes is offered in the self-framing and rigid-frame building from 8 to 120 feet wide.

A special feature is a continuous-type purlin system in the roof of rigid-frame and truss-type buildings. Roof framework is lighter and more rigid. Purlins are above the rafters, out of the way of wiring, sprinklers, ductwork, insulation, and other equipment.

For further information write to Armo Drainage & Metal Products, Inc., Dept. C&E, 703 Curtis St., Middletown, Ohio, or use the Request Card at page 18. Circle No. 58.

## ALL NEW-LOW COST



### High-Cycle Electric Paving Breaker Set

**COMPARE THESE COSTS.** This high-cycle electric paving breaker will do everything that a 45 lb. air hammer will do but look at the costs. A 45 lb. air hammer, hose and small air compressor cost at least \$3,000. This paving breaker set . . . The BOSCH (Germany) Paving Breaker and the HOMELITE Generator to run it . . . cost about \$1,300 combined. These are savings you'd like to pocket. But that is far from all.

**COMPARE THESE RESULTS.** Gets to the job faster. Compact and lightweight, the complete

set can be rushed in a station wagon, small truck or car trunk. Makes less noise and pays an important, extra dividend. The HOMELITE Generator provides enough high-cycle power for two paving breakers; and in addition, 110 volts DC current for floodlights and AC-DC electric tools. Simple design and rugged construction assures minimum maintenance. And service, when necessary, is available in the sixty-five HOMELITE Factory Branches located throughout the country. Write for Bulletin L-827A, right now.

**BOSCH HIGH CYCLE ELECTRIC PAVING BREAKER**  
Dimensions: 28" x 21" x 5"  
Weight: 60 lbs.  
Blows per Minute: 1250  
Current Consumption: 1500 watts  
Motor: 180 cycle, 230 volt, 3-phase AC (high-cycle)  
**HOMELITE CARRYABLE GENERATOR**  
Rating: 3000 watts, 230 volt, 180 cycle, 3-phase AC, 2500 watts, 110 volt DC.  
Dimensions: 30" x 20" x 20"  
Weight: 143 lbs.  
Fuel Consumption: 1½ hours per gallon at full load.

## HOMELITE

A DIVISION OF TEXTRON INC.  
9607 Riverdale Ave., Port Chester, N. Y.  
Manufacturers of Carryable Pumps, Generators, Blowers and Chain Saws  
In Canada, Terry Machinery Co., Ltd.

Tools built by BOSCH (Germany)  
Sold and Serviced by HOMELITE

For more facts, use Request Card at page 18 and circle No. 304



This Heltzel Flex-Plane machine is said to have a proven capability of finishing 12 fpm of 24-foot pavement.

### Finisher-float machine reduces paving costs

The Horvitz Co., a Cleveland highway construction firm, substantially reduced its paving costs through the use of a Heltzel Flex-Plane combination gas-electric finisher-float machine and Heltzel Cam-Lok highway forms.

The Flex-Plane combination, with its hydraulic self-widening finisher section that makes it adjustable from 12 to 26 feet, facilitated the finishing of ramps and approaches on Ohio's Route 1, a 3-mile, 4-lane interstate highway. The independent power units allow two different simultaneous screed speeds and two independent traction speeds. This feature is said to have enabled Horvitz to easily finish around curves.

According to the company, the Flex-Plane machine eliminated the need for longitudinal float and operator, thus reducing costs by requiring only one operator and two hand finishers for floating and finishing operations.

A further saving was attained by Horvitz with the use of the Cam-Lok forms. Two men set as much as 2,600 working feet of forms in a day.

For further information write to the Heltzel Steel Form & Iron Co., Flex-Plane Division, Dept. C&E, Warren, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 66.

### Additive for cement aids in stopping leaks

A liquid chemical additive said to make a fast-acting leak stopper out of ordinary cement is offered by the Building Maintenance Division of the Flexrock Co.

States the manufacturer, Flexite regulates the setting time of portland cement, making it possible to stop direct leaks almost instantly. It is especially recommended for pointing up spalled areas or re-forming exposed reinforcing bars or beams, as well as for handling leakage problems in reservoirs, viaducts, concrete pipe, and retaining walls.

For further information write to the Building Maintenance Division, Flexrock Co., Dept. C&E, 3624 Cuthbert St., Philadelphia, Pa., or use the Request Card at page 18. Circle No. 95.

### New rust inhibitor is all-purpose compound

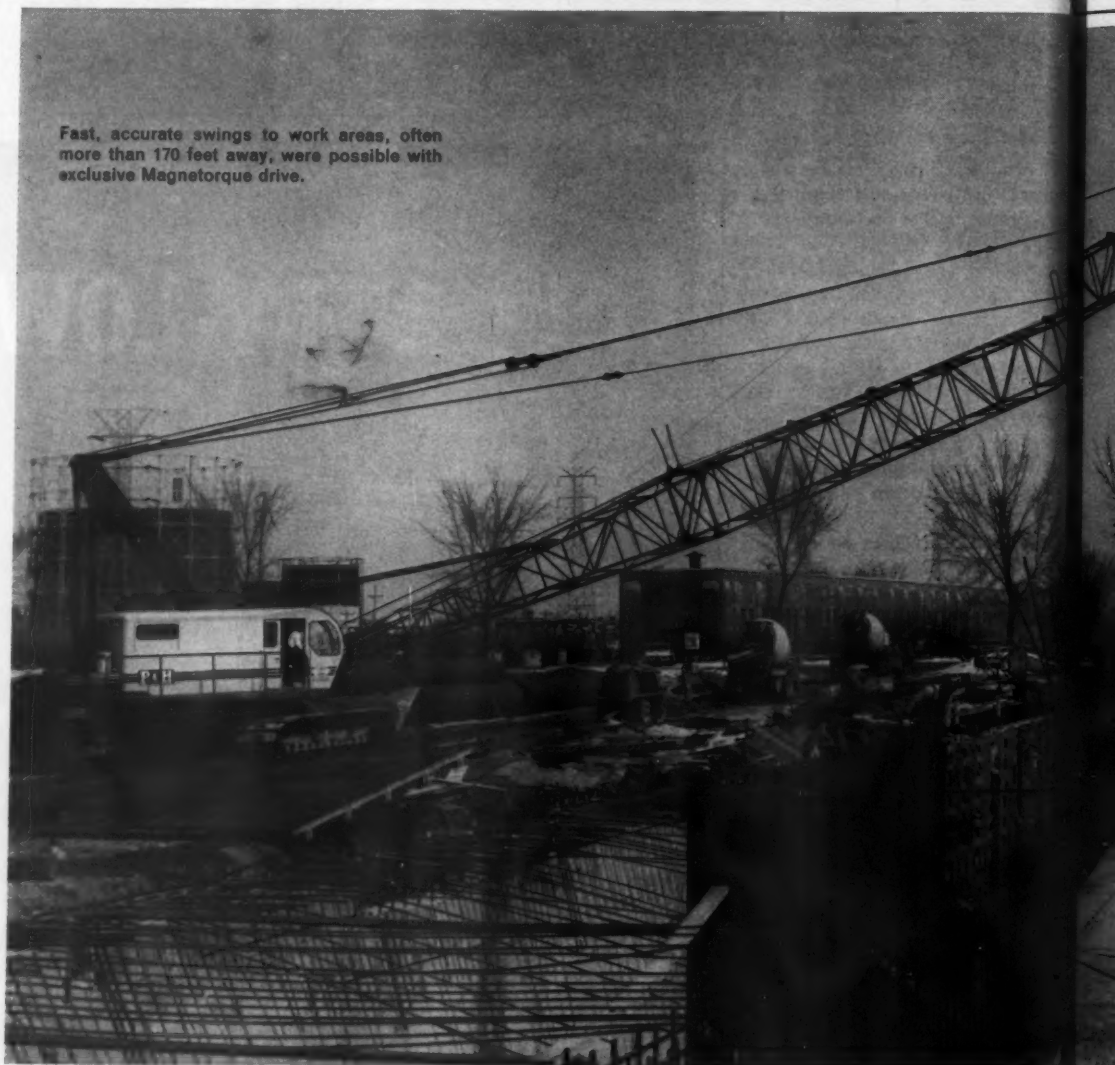
A universal rust-inhibitor compound, said to give long-lasting corrosion protection to all forms of iron and steel with a single application, is offered by Brad Chemical, Inc.

Called Poly-Rustex, the new preparation is a special combination of active materials dispersed in an oil-carrier base. According to the manufacturer, the ingredients penetrate deeply through existing corrosion to the bare metal and form a solid air-and-moisture-tight seal.

Poly-Rustex will not discolor the metal, comes ready to use without mixing, and can be easily and quickly applied to any metal surface by a variety of methods—brush, spray, mop, or dip. It is low in viscosity, nonsettling, and nonfreezing; can be stored indoors or out in any weather.

For further information write to Brad Chemical, Inc., Dept. C&E, 111 W. Washington St., Chicago 2, Ill., or use the Request Card at page 18. Circle No. 83.

Fast, accurate swings to work areas, often more than 170 feet away, were possible with exclusive Magnetorque drive.



## "LONG REACH MAKES THE DIFFERENCE... IT'S THE KEY TO EFFICIENT OPERATION"

... J. L. SIMMONS COMPANY INC., CONTRACTORS—NORTH SIDE SEWAGE TREATMENT WORKS OF GREATER CHICAGO

One of the nation's oldest contractors reports their 110-ton P&H Crawler Crane operation.

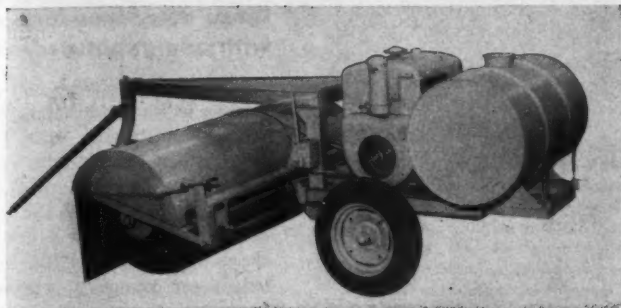
Here's what F. A. Miller, Construction Manager has to say . . . "Without a doubt, our 110-ton P&H Crane has been the key to this operation. Its lived up to our every expectation. For example—we've poured concrete over 170 feet away with a 200 foot boom and a 1-yard bucket . . . over 150 feet away with a 2-yard bucket. Its got the fastest, controlled swings of any crane I've seen. We're ahead of schedule and our work is proceeding smoothly, efficiently as planned . . . thanks to our P&H."

**Long Reach**—the ability to handle up to 300 feet boom permitted J. L. Simmons Company to work from the perimeter of the job and spot light loads anywhere . . . resulted in faster, more economical construction, more efficient operation.

**Big Capacity**—with a rating of 110 tons, the P&H had more than enough capacity to handle the heavy work loads of concrete and equipment at those far out reaches . . . enabled Simmons to maintain high production and uninterrupted work flow.

**Fast, Effortless Swings**—with exclusive Magnetorque® drive. The big crane gave Simmons more work loads per hour and smoother, more accurate





On the Hyport, hydraulic controls regulate up-and-down movement of the broom, while simple manual controls change the sweeping angle. Brushes come in lengths of 6, 7, 8, and 9 feet.

## Tow-type road sweeper has short turning radius

A heavy-duty road sweeper called the Hyport is offered by Little Giant Products, Inc. Light in weight and easy to handle, this sweeper has a 3-wheel chassis and 100-inch wheelbase giving it an exceptionally short turning radius.

Quickly and easily attached to any type of tractor, truck, or other vehicle, the Hyport is driven by a Wisconsin 15-hp engine. If necessary, the prime mover can be slowed down for unusually heavy accumulations while

the brush maintains a constant speed.

Hydraulic controls regulate up-and-down movement of the broom, while simple manual controls change the sweeping angle. The brush angles 30 degrees right or left and is reversible for even wear. Brushes come in 6, 7, 8, and 9-foot lengths, and are of tough, wear-resistant palmyra fiber. Steel brushes are also available.

Height of the sweeper is 51 inches; diameter of the brush is 31 inches. Optional accessories include 4-wheel chassis, air-cooled or water-cooled engine, sprinkler system and pump, water tank up to 300-gallon capacity, and a 6,100-cfm blower for seal coating.

For further information write to Little Giant Products, Inc., Dept. C&E 1578 N. E. Adams St., Peoria, Ill., or use the Request Card at page 18. Circle No. 35.

## Floor, truck cranes have 1-ton capacity

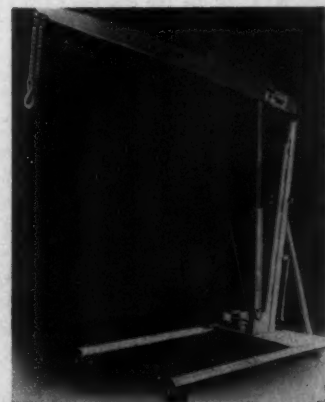
Ruger Equipment, Inc., announces the availability of a completely redesigned series of manually operated 1-ton-capacity hydraulic floor and truck cranes.

Featuring lightweight high-strength construction and a new 2-speed hydraulic control valve, these versatile cranes enable one man to lift, transport, and position loads in a single operation. In addition, they are said to be flexible enough to reach in, under, or over obstructions or equipment for positioning of loads.

Four models of floor cranes, including a convertible floor-truck unit, and one truck or pedestal-base model are available in the new line.

A new adjustable control valve provides both faster lifting speeds with light loads and extra power for easier lifting of heavy loads. It also incorporates a variable needle-type release valve that reportedly assures precise fingertip control over lowering speeds, as well as positive holding action.

For further information write to Ruger Equipment, Inc., Dept. C&E, 194 W. Fourth St., Uhrichsville, Ohio, or use the Request Card at page 18. Circle No. 96.



Included in the new Ruger line are four models of floor cranes and one truck or pedestal-based unit.

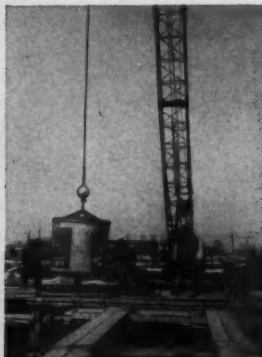
For more facts, use Request Card at page 18 and circle No. 305

## See your P & H dealer . . . for your complete sales and service needs

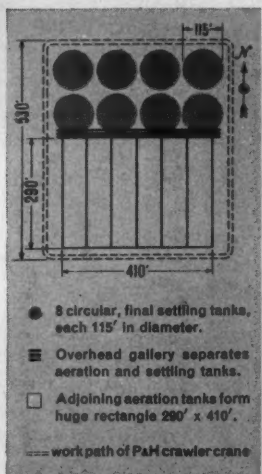
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HANSTROM-HUBBY TRACTOR CO.  
Marion, Iowa  
PECAUT INDUSTRIAL SUPPLY CO.  
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NEWLIN MACHINERY CORPORATION  
Kansas City 3, Kansas  
EMBRY BROTHERS, INC.  
Louisville 16, Kentucky  
PATTERSON-REDMOND EQUIP., INC.  
Baton Rouge, Louisiana  
CONTRACTORS EQUIP. CO. OF LA., INC.  
Monroe, Louisiana  
PINE TREE TRACTORS  
Augusta, Maine  
LUTHERVILLE SUPPLY & EQUIP. CO.  
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Fifteen Branches in Ohio and the Virginias  
BOARDMAN MACHINERY COMPANY  
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A. T. GREEN MACHINERY COMPANY  
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Columbia, South Carolina  
PECAUT EQUIPMENT COMPANY  
Sioux Falls, South Dakota  
SOUTHLAND TRACTORS, INC.  
Memphis, Tennessee  
PLAINS MACHINERY COMPANY  
Amarillo, Texas  
CENTRAL TEXAS EQUIPMENT CO.  
Austin, Texas  
LUMBY MACHINERY COMPANY  
Dallas 35, Texas  
PEARCE EQUIPMENT CO. OF TEXAS  
Houston, Texas  
AIR MAC, INC. OF WASHINGTON  
Seattle 4, Washington  
CARRINGTON COMPANY  
Seattle 4, Washington  
DROTT TRACTOR COMPANY, INC.  
Milwaukee 5, Wisconsin  
WILSON EQUIPMENT & SUPPLY CO.  
Cheyenne, Wyoming  
HONOLULU IRON WORKS CO.  
Honolulu, Hawaii



Long reach of the 110-ton P&H permitted efficient work procedure. Here the crane loads concrete bucket from mixer truck on job perimeter before delivery to work area.



Precise spotting of work loads was a cinch due to P&H planetary boom hoist, unmatched stability and positive-action hydraulic controls.



Overall job layout and type of unit construction indicates importance of perimeter work operation.



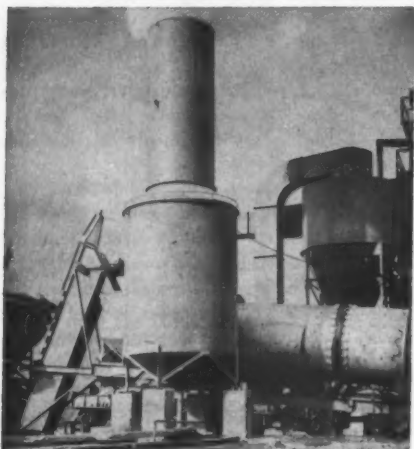
starting and stopping . . . Highly important in this operation where long, safe swings were a necessity.

**Accurate Spotting of Loads**—precise accuracy in spotting loads at far-out reaches was a problem on this job—and was solved through Independent Planetary Boom Hoist, which permitted power lowering of the boom, together with the simple Hydraulic Control System—where the slightest lever or pedal movement produced immediate response—resulted in smoother work cycles with no lost time jockeying for position.

**Unmatched Stability**—the ability to handle up to 300 feet of boom and the rated loads with utmost accuracy and safety were the result of P&H balanced design, even weight distribution and the extra wide 16' 10" crawler assembly. It was this built-in stability that permitted those long reaches with full capacity loads.

For the full detailed report on this unusual job story, write for Case History Report No. 102.

**HARNISCHFEGER P&H**  
Milwaukee 46, Wisconsin



An exhaust washer said to provide a simple, highly effective method of controlling removal of dust caused by aggregate drying operations with asphalt plants is available from the Iowa Mfg. Co. Now available in three sizes, with capacity ranging from 15,000 to 45,000 cfm, Cedarapids Models 72-W, 96-W, and 120-W exhaust washers feature renewable protective coating on all inner surfaces, and quick, easy setup. In addition, these exhaust washers do not require auxiliary fans to provide draft; there are no filters, louvers, or vanes to clog, wear, and replace; no special housing or installation is needed; and no extensive ductwork is required—the washer connects directly to the dry-dust collector. For further information write to the Iowa Mfg. Co., Dept. C&E, 916 16th St. N.E., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 56.

### Improved control units for multi-arc welding

An improved line of multi-arc welding control units has been introduced by J. B. Nottingham & Co., Inc.

The new Weldline resistor units are available in compact, lightweight 6, 4, and 2-operator models.

In addition to their use in dc metallic arc welding with coated elec-



trodes in all positions, the units may be used for other types of electric arc welding, including the gas-shielded tungsten arc and consumable electrode processes. Switches on the front of each drawer in the unit make it easy for each operator to vary the current in steps as small as one amp.

Enclosed in a welded-steel frame, with expanded-metal bottom and side panels and a solid steel top with side louvers for additional ventilation, the units are completely convection-cooled and require no fans.

For further information write to J. B. Nottingham & Co., Inc., Dept. C&E, 441 Lexington Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 97.

### Reinforcing bars marked for size and strength

High-strength multirib reinforcing bars marked for immediate identification of size and strength are offered by the Laclede Steel Co.

The bars are identified for two new grades by one or two longitudinal ribs rolled into the bars at the time of manufacture. The identification system also includes a number designating the bar size.

For further information write to the Laclede Steel Co., Dept. C&E, Arcade Bldg., St. Louis, Mo., or use the Request Card at page 18. Circle No. 30.

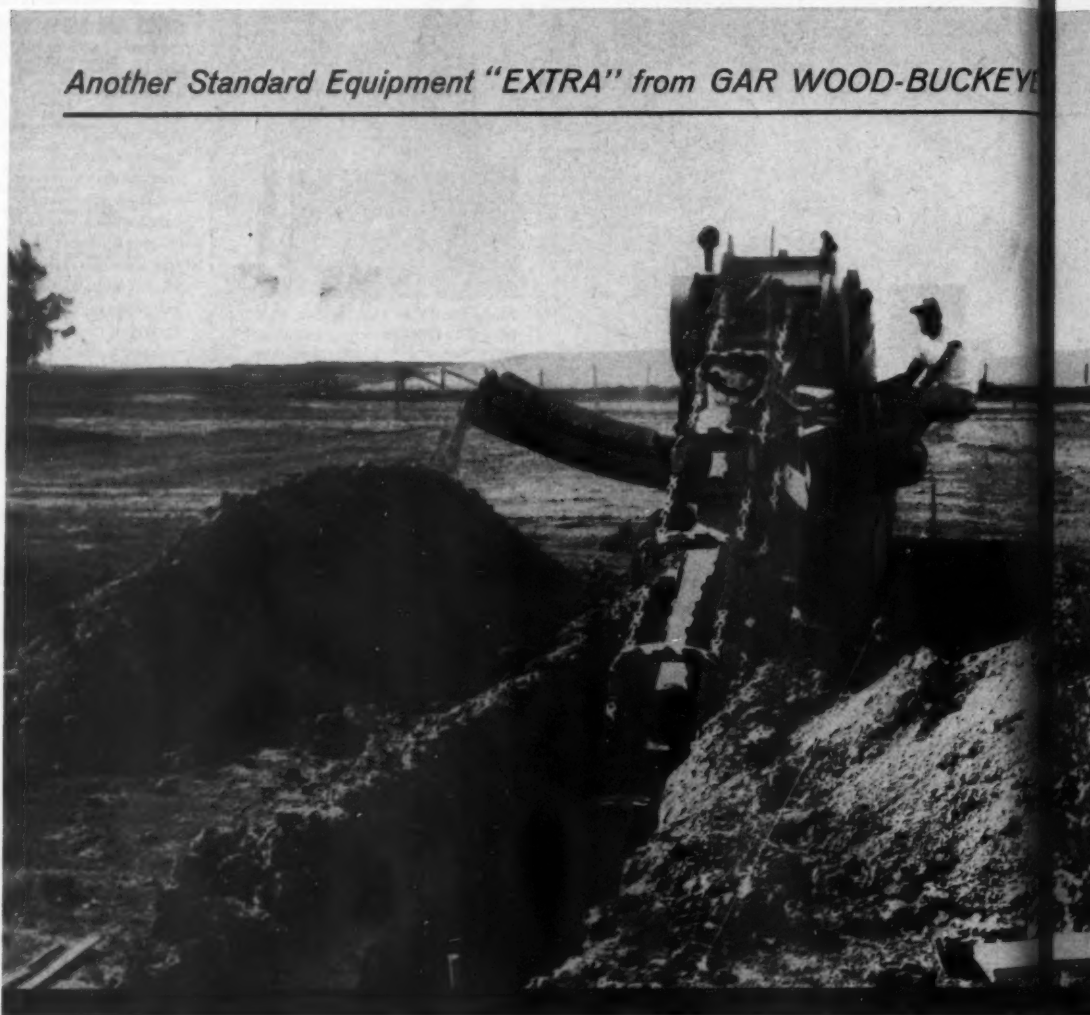
### Diazo developer for use with any exposure unit

A new diazo-developer unit is announced by Charles Bruning Co., Inc.

Known as Copyflex Model 44, the machine can be used with any exposure unit to make ready-to-use diazo prints, on the spot and without delays. The motor-driven unit takes sheets up to 42 inches wide by any length, and develops at a speed of 6 linear fpm. It operates from conventional 115-volt single-phase ac.

For further information write to the Charles Bruning Co., Inc., Dept. C&E, 1800 W. Central Road, Mount Prospect, Ill., or use the Request Card at page 18. Circle No. 46.

### Another Standard Equipment "EXTRA" from GAR WOOD-BUCKEYE



**GAR WOOD-ST. PAUL TRUCK EQUIPMENT**, with precision hydraulics system, handles controlled dumping smoothly and quickly. It's the most complete line of arm-type, under-body and front-mounted telescopic hoists, with matching bodies.



**GAR WOOD TRACTOR EQUIPMENT**, matched to rugged Euclid tractors, insures trouble-free performance under the biggest loads. Equipment includes Tipdozers, Dozcasters, Rippers and front- and rear-mounted cable control units.



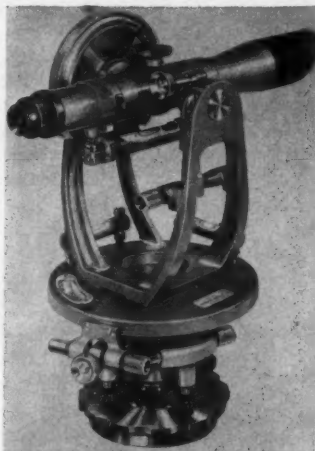
### Rugged new transit offers several features

The Warren-Knight Co. announces a new transit, constructed entirely of brass and bronze with a special steel center, that features an internal focusing, 24-power, erecting telescope that can be plunged between standards like an engineer's transit for back sights.

The unit has full vertical and horizontal circles, and both can be read to single minutes with double verniers.

This transit is supplied complete with a wide-frame tripod in a hard-wood carrying case, plus accessories.

For further information write to the Warren-Knight Co., Dept. C&E,



136 N. 12th St., Philadelphia 7, Pa., or use the Request Card at page 18. Circle No. 20.

### Safety is feature of new car shaker

A new car shaker, said to be completely safe for one-man operation, is offered by the Syntron Co.

It can be mounted anywhere along the length of the car by means of a jib crane or fork-lift. There are no chains or rods to tighten, no need for the operator to get in, on, or under the car.

This rotary-vibrator car shaker transmits powerful vibrations throughout the car to loosen and



In a sturdy steel frame designed to hook over light or heavy-flanged car sides, the new Syntron unit has a balancing counterweight that simplifies mounting.

shake the compacted material through open hopper gates. The self-contained rotary vibrator produces 900 vibrations per minute, operating from a 220 or 440-volt, 3-phase, 60-cycle ac supply.

For further information write to the Syntron Co., Dept. C&E, 227 Lexington Ave., Homer City, Pa., or use the card at page 18. Circle No. 88.

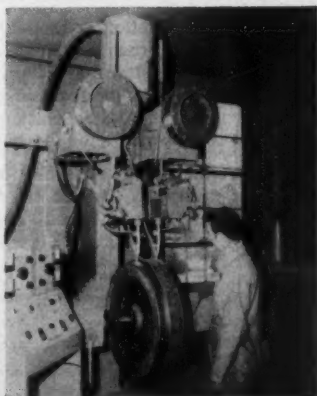
### Welding unit resurfaces larger rollers, wheels

The Automatic Welding Co. announces a new unit capable of hard-surfacing rollers, idlers, and wheels up to 40 inches in diameter.

Called Micro-Matic Model 7520-Y, it is equipped with a new full yoke that permits mounting all types of rollers, including large, integral-shaft rollers such as are used on heavy equipment.

According to the manufacturer, this unit has all the features of the present models, including variable-speed travel carriage, motorized welding head lift, and master control console with complete controls. It is available with single or dual welding heads.

For further information write to the Automatic Welding Co., Dept. C&E, Airport Road, Waukesha, Wis., or use the Request Card at page 18. Circle No. 98.



This full-yoke double-head welder hardsurfaces rollers, idlers, and wheels up to 40 inches in diameter.

# HI-LO TRACTION SHIFT

## Speeds Ditching...Cuts Fuel Costs

Only the Gar Wood-Buckeye 407 general utility ditcher has the exclusive Hi-Lo traction shift that permits forward or reverse digging speed to be instantly increased or reduced 50% without disengaging the main engine clutch. Hi-Lo shift simplifies speed selection, reduces fuel consumption, provides instantaneous adjustments to digging and traction conditions and simplifies matching crawler speeds to depth of cut.

There's a long list of standard equipment "extras" your Gar Wood-Buckeye dealer can show you to prove the superior performance of the 407... "live" hydraulic boom crowd, push button conveyor shift, greater speed range without sprocket changes, two speed conveyor and non-reach grouped controls. Why not get the complete story on Gar Wood-Buckeye standard equipment "extras"... soon.



**GAR WOOD TRUCK CRANES** deliver a smooth flow of precision controlled power. Advanced, high-performance features let you do more kinds of jobs...faster...more accurately...at lower cost.

**GarWood**  
INDUSTRIES, INC.

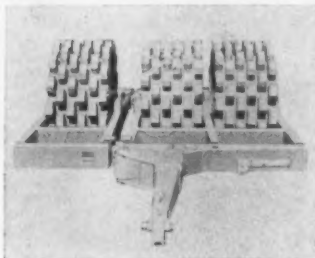
Findlay, Ohio • Wayne, Michigan

For more facts, use Request Card at page 18 and circle No. 305

## Roller compaction width increased by third wheel

A third wheel can now be attached to Hyster Model D tamping and grid rollers to increase compaction width by over 50 per cent.

The standard rollers consist of two wheels, each 32 inches wide, mounted



inside a frame. The attachment contains another such wheel in a separate frame. It is hinged to the side of the basic unit.

Addition of the third-wheel attachment increases compaction width from 6 to 10 feet. The roller tongue is relocated on a special bracket, placing it on the center of the frame for towing.

The roller can be quickly converted back to original width by replacing the tongue.

For further information write to the Hyster Co., Dept. C&E, P. O. Box 328, Peoria, Ill., or use the Request Card at page 18. Circle No. 82.



"Best investment we ever made," says contractor of this trailer-mounted Malsbary HPC cleaning system.

## Take grief out of equipment cleaning with Malsbary HPC Cleaning System

Here's the speediest, most efficient system on the market for cleaning equipment, parts, etc. — the all-in-one compact, multi-purpose package. Whether your cleaning involves layers of greasy dirt that cause engine overheating . . . heavy, abrasive grime . . . ice and frozen mud . . . dirty parts that slow mechanics . . . degassing tanks for new cargoes or welding repairs . . . too much downtime for cleaning — you'll find the Malsbary HPC system a quick, money-making solution to your equipment cleaning problems.

Key to fast, effective cleaning is the heat, pressure and volume delivered by the Malsbary HPC system. You get:

Hot solution at thermal-hydraulic pressures 2 to 4 times greater than any steam cleaner . . . hot or cold water at a dirt-blasting 300-400 psi . . . gentle rinse or wash water . . . wet steam for degassing and heating . . . and greatest time saver of all, hot solution and cold water, or wet steam and cold water, simultaneously from 2 to 4 guns.

More than 6000 in use. See for yourself how the Malsbary HPC system breezes through the toughest cleaning jobs. Ask your Malsbary dealer about 10-day buy-and-try plan . . . see phone book yellow pages or write us, outlining your cleaning problems.

ASK ABOUT the Malsbary green steam cleaner hose . . . it's durable, oil and abrasion resistant.



For more facts, use Request Card at page 18 and circle No. 307



Available in either 55 or 65-inch bare bucket cutting width, the backhoe is offered with a "positive-pressure" attachment as an optional extra. The Series 900 has a full 18-inch ground clearance.

## New crane-excavator is air-controlled

A completely new air-controlled crane-excavator in the 3½ to 4½-cubic-yard range is announced by the American Hoist & Derrick Co.

When rigged as a lifting crane, the machine has a rated capacity of 110 tons. Several types of booms are available, the erecting type having an operating length of 270 feet, plus jib. The backhoe is available in either 55 or 65-inch bare bucket cutting width with a "positive-pressure" attachment as an optional extra.

Said to be easily and quickly prepared for transport, the American 900 Series has a full 18-inch ground clearance. Tread shoes have 38 and 44-inch widths.

Independent swing is available with either air-controlled friction clutches or hydrostatic drive. The boom hoist features a sprag-type overrunning

lowering clutch.

The operator's compartment is totally enclosed, reducing to a minimum engine and machinery noise. Access to the machinery is through a door at the rear of the operator's compartment.

All drum and shaft assemblies on the machinery deck are laid out in such a way that inspection or removal can be made without major disassembly, states the company.

The American Series 900 can be supplied with General Motors, Cummins, Caterpillar, or Allis-Chalmers diesel engines, with various torque converters or direct-drive.

For further information write to the American Hoist & Derrick Co., Dept. C&E, 63 S. Robert St., St. Paul 7, Minn., or use the Request Card at page 18. Circle No. 70.

**HERE WE GO!  
WAGON TRAIN**  
MORE TONS PER TRIP  
A CONVENIENT WAY TO  
UNLOAD — SIDE DELIVERY —  
KEEP GOING. LEAVE  
ROAD CLEAR FOR NEXT  
WAGON TRAIN

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Mine Haulage Equipment  
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WAGON TRAIN®

For more facts, use Request Card at page 18 and circle No. 308

CONTRACTORS AND ENGINEERS



## Aggregate feeder setup permits bin extensions

Barber-Greene announces the Model 817 Add-A-Bin aggregate feeder.

Each Model 817 bin is a complete unit, constructed on a "building-block" design, readily permitting combinations of two, three, four, or more units. Each has a basic capacity of 8 tons. However, through the addition of bin extensions, in 2, 4, and 6-foot increments, this capacity may be increased, at the rate of 4 tons per foot of extension until each bin has a capacity of 32 tons.

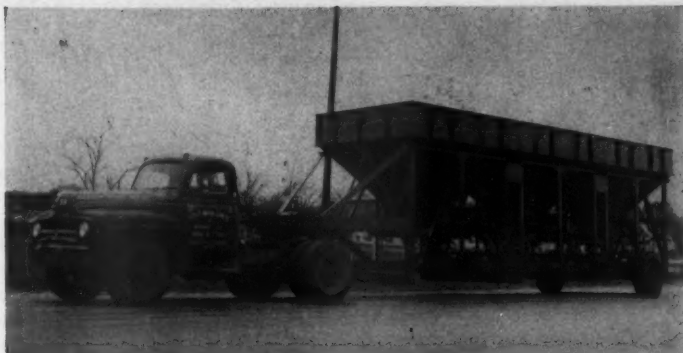
Each bin is equipped with a Barber-Greene Model 432 belt feeder,

and when any combination of any number of bins is used, total and proportional control of the aggregate feed may be achieved.

As many as three 817 bins may be combined on a single-axle portable chassis, capable of over-the-road towing at 25 mph.

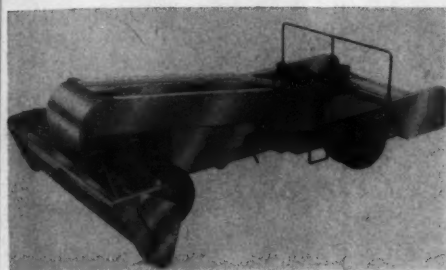
The 8x10-foot bin opening is said to be especially suited for front-end loading and to make crane charging easy.

For further information write to Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the card at page 18. Circle No. 71.



Combined on a single-axle portable chassis, as many as three Barber-Greene Model 817 bins can be towed over the road at speeds up to 25 mph.

## Chip spreader for seal-coating is self-propelled



A fully sealed gasoline engine develops 88 bhp to power the Model SP. Forward speeds range to over 20 mph.

The Highway Equipment Co. offers the Model SP self-propelled chip spreader for seal-coat work.

The feed roll, feed augers, feed gate, and hitch can be directed from a single, readily accessible operator's station, states the manufacturer.

Material flow is synchronized to the actual ground speed of the SP. A 36-inch-wide mining-type conveyor belt delivers the material from the rear to the front hopper.

The large-capacity rear hopper (3.5 cubic yards struck) has a quickly adjustable feed gate to maintain the

required amount of material into the front hopper.

The unit is powered by an 88-bhp engine, and the automotive-type transmission has 5 speeds forward and 1 in reverse. Operating range is from 0 to better than 20 mph travel speed forward; over 10 mph in reverse.

For further information write to the Highway Equipment Co., Dept. H20-9, Dept. C&E, 616 D Ave. N. W., Cedar Rapids, Iowa, or use the Request Card that is bound in at page 18. Circle No. 99.



Completely new design uses simple turbine wheel for power.

## NEW VIBER TURBOVIBER®

Powerful, dependable,  
high speed, form vibrator  
for concrete casting yards

10,000 rpm. Exerts over a ton of force.

No motor lubrication. No sliding friction. Minimum maintenance.

Only one rotating assembly. Long life.

Always starts. No vanes to stick.

Drastically reduced operating costs.

Convenient mounting clamps for easy attachment to any form.

For additional information, see your Vibber dealer or write Vibber Company, 726 South Flower Street, Burbank 21, California.



## Vibber Vibrators

Pioneers and leaders in the manufacture of vibrators

For more facts, use Request Card at page 18 and circle No. 310



## New RIDLEY CONCRETE GUN RIGS

Unit for unit, Ridley Concrete Gun Rigs will put more concrete in place at less cost than any other rig or method available.

### YOU'LL CUT COSTS 3 WAYS

1 **COST OF EQUIPMENT**—Despite their efficiency, Ridley Rigs are priced substantially below others.

2 **COST OF MAINTENANCE**—Maintenance costs are virtually non-existent.

3 **COST OF OPERATION**—In every class, the Ridley Rig will shoot 50% more material with 1/2 less air than the next best rig. 25% reduction in crew means further savings.

Available in any type of truck chassis or trailer. Write for technical data and model list.

Ridley and Company, Inc.

2217 Pontius Avenue  
Los Angeles 64, California

For more facts, use Request Card at page 18 and circle No. 309



Outward appearances of the new Cat No. 112 Series E and No. 112 Series F motor graders are similar. Major differences are in the power plant, with the No. 112F having a compact-design turbocharged diesel delivering 100 horsepower.

### Motor graders powered with new-design engines

Three new models of motor graders are announced by the Caterpillar Tractor Co. The machines are designated Nos. 112E, 112F, and 12E.

The No. 112F is powered by a turbocharged 4-cylinder diesel engine of compact design, which is rated at 100 horsepower. Horsepower of the No. 112 Series E is 85, an increase of 13 per cent over the previous model. The No. 12E is rated at 115 horsepower.

Both the No. 112E and No. 112F incorporate the Caterpillar oil clutch, improved blade controls, a one-piece transmission and final drive case, and the recently developed dry-type air cleaner.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card that is bound in at page 18. Circle No. 84.

### Power, safety featured on hydraulic winch

A hydraulic winch said to combine constant load, speed, torque, and horsepower with safe and efficient one-man operation is available from the Braden Winch Division of the Motor Products Corp. The unit is conservatively rated at 12,000 pounds capacity.

Designated Model CL, the winch



has three basic cable speeds, and speeds within the three gears can be varied by hydraulic control.

An automatic worm brake is self-adjusting to wear and load. In the event of a power loss during operation, the brake locks automatically, holding the load safely until full power is restored.

Reversing is done under power, with unspooling at any speed up to the speed of the drum.

The unit's remote-control system features two control levers—one for the hydraulic valve, the other for the transmission.

The basic Model CL is designed to handle either 1/2-inch or 7/16-inch-diameter cable, but it can be adapted to handle cable of other sizes.

For further information write to the Braden Winch Division, Motor Products Corp., Dept. C&E, P. O. Box 547, Broken Arrow, Okla., or use the Request Card at page 18. Circle No. 100.

### Design changes announced in rubber-tire dozer

A number of design changes in the Michigan Model 180 tractor-dozers have been announced by the Construction Machinery Division of the Clark Equipment Co.

Changes include a new blade containing a built-in push plate that permits the Model 180 to be used as a dozer or pusher without exchanging dozer blade for push block; two large double-acting hydraulic cylinders added to the dozer blade push arms, permitting the operator to tilt the blade while in motion; wheel base lengthened 12 inches for additional stability; and, for steering



### ... and for NEARBY SERVICE on Black & Decker tools.

Black & Decker maintains 50 factory service branches plus authorized service stations to give your B&D tools the attention mechanical products need periodically. Keep your B&D tools in top condition, on the job all the time.

Only factory parts and factory-approved methods are used. Fast service and reasonable cost, always.



SWIFT SERVICE says be sure to ask about: FREE TOOL INSPECTION no cost, no obligation. STANDARD RED GUARANTEE after completion of all recommended repair work.

You'll find the location of the nearest B&D repair facility in the Yellow Pages under "Tools-Electric," or write for address to: THE BLACK & DECKER MFG. CO., Dept. 1307-S, Towson 4, Md.



Quality Tool Service

CONTRACTORS AND ENGINEERS



## BUILT TO DIG!

- Long rollers and large idler sheave more adequately protect cable.
- All moving parts greased.
- Large diameter sheaves stay out of material, no sockets to collect material, causing cable or sheave wear.
- Standard integral scoop stiffeners.
- Contact design stops, no friction pads to wear.
- Independent hinge suspension, scoops can dig individually.
- Alloy treated lips with hard surfacing.
- Wide scoops, large deck area for maximum cleanup ability.
- Wedge and socket connections are easily reeved and connected.
- Integral sockets for complete adjustability of reeving.
- Full complement of five sheaves for fullest digging power, readily adjustable to any lesser parts of line.
- Correctly shaped scoops have no interior projections, assure smooth fast dumping.
- "I" heads on pins can be reversed to distribute wear.

## WILLIAMS BUCKETS

Durable clamshell and dragline buckets for every application

Williams Bucket Division, The Wellman Engineering Company, 113 St. Clair Ave. N.E., Cleveland 14, Ohio

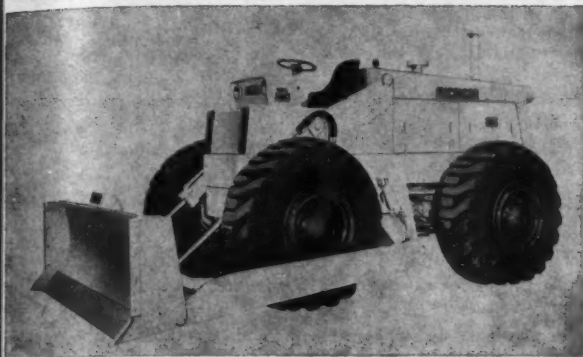
**SEND FOR FREE CATALOG**

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The Wellman Engineering Co.  
113 St. Clair Ave. N.E., Cleveland 14, Ohio  
Please send me the new Williams Bucket catalog.

NAME \_\_\_\_\_  
COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_

For more facts, use coupon or Request Card at page 18 and circle No. 311





The diesel-powered, 162-hp Model 180, smallest in the Michigan line of rubber-tired tractor-dozers, now has all features that are standard on the two larger units of this type, including the Michigan power train.

two double-acting hydraulic cylinders in place of the single cylinder previously used.

For further information write to the Construction Machinery Division, Clark Equipment Co., Dept. C&E, 2407 Pipestone Road, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 50.

### New support lagging for use as cribbing

A versatile support lagging for use as cribbing in mining and construction has been announced by the Commercial Shearing & Stamping Co.

Light, easy to handle, and fireproof, the lagging has a ribbed surface that permits interlocking when overlapped with the next lagging mat. The manufacturer points out that this not only increases the strength of the wall system and prevents dangerous gapping but eliminates need for anchoring the mat.

Used to form a stable wall between rib flanges or sets and the wall of an excavation, the support lagging provides protection from falling rock or spalls; receives and transfers loads from earth to the rib system; provides a surface against which to place backfill; and provides a convenient surface against which to block when it is inconvenient to block against supporting ribs.

Eleven and one-half inches wide, the lagging is available in lengths to 9 feet.

For further information write to the Commercial Shearing & Stamping Co., Dept. C&E, P. O. Box 239, Youngstown, Ohio, or use the Request Card at page 18. Circle No. 52.



The interlocking feature of the support lagging eliminates the need for anchoring, thus decreasing installation time.

For more facts, use coupon or Request Card at page 18 and circle No. 312

### Versatile cutting torch provides uniform action

A new, lightweight cutting torch, featuring a built-in pressure-control system for smooth, even cutting with various types of fuel gases, has been announced by Weldit, Inc.

Designed to eliminate flashbacks, the torch, called the Jet-Stream 707, is equipped with an injection-type mixing chamber and valve system which provide a controlled, steady application of oxygen and prevent

"jumps." According to the company, the new torch cuts steel up to 15 inches thick or more when required, and works equally well with all types of fuel gases.

The unit is available with either 70 or 90-degree head.

For further information write to Weldit, Inc., Dept. C&E, 990 Oakman Blvd., Detroit 38, Mich., or use the Request Card at page 18. Circle No. 76.



NEW SENATE OFFICE BUILDING  
Washington, D. C.



U. S. AIR FORCE ACADEMY  
Colorado Springs, Colo.



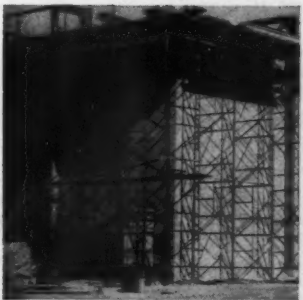
MISSOURI RIVER BRIDGE  
St. Charles, Mo.



CHENNAULT AIR FORCE BASE  
Lake Charles, La.



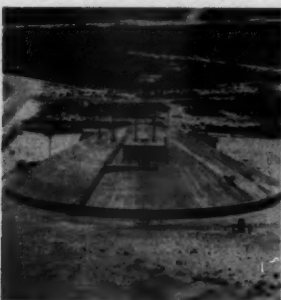
HIBONNET PLAZA  
New Orleans, La.



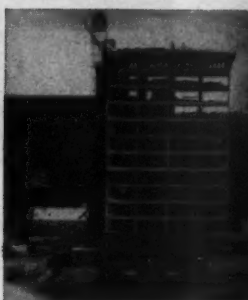
MINOT AIR BASE PROJECT  
Minot, N. Dakota



ROUTE #15 BYPASS  
Amity Hall, Pennsylvania



CAPE CANAVERAL MISSILE  
CENTER, Cocoa, Florida



GLENWOOD REDEVELOPMENT  
PROJECT, Minneapolis, Minn.

## On the job at the TOP TEN!

### America's top construction jobs pick world's toughest saw, Black & Decker

From coast to coast . . . under roughest field conditions . . . leading contractors and builders specify Black & Decker Saws. Why? For better control in the wood. For dependable operation.

\*Courtesy Minneapolis Star & Tribune



For solid all-round performance and more board feet per day. Black & Decker Saws turn out the work fast with less downtime. A trial on the job will convince you! Write for free demonstration!

LEADING DISTRIBUTORS EVERYWHERE SELL

**Black & Decker**  
QUALITY ELECTRIC TOOLS



THE BLACK & DECKER MFG. CO., Dept. 1307  
Towson 4, Md. (In Canada, Brockville, Ont.)

☐ Arrange a free demonstration of the world's toughest saws.  
☐ Send additional information on \_\_\_\_\_

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☐ Saws



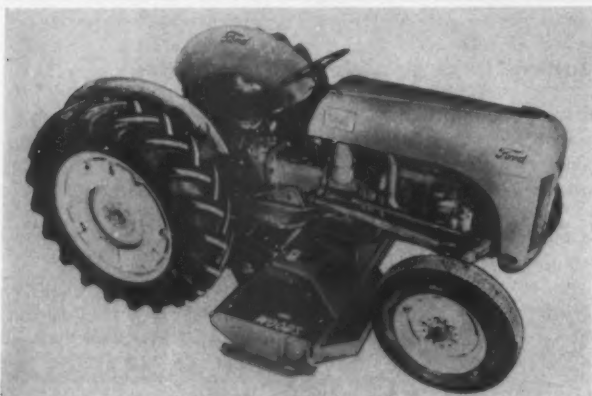
☐ Drills



☐ Impact Wrenches



☐ Jig Saws



Designed for center mounting on small utility tractors for high-speed mowing, the Model 62 features twin blades that cut a full 5-foot swath.

### Center-mounted mower cuts 5-foot swath

A center-mounted rotary mower for Ford and Ferguson tractors is offered by the Wood Bros. Mfg. Co.

The Model 62 is equipped with twin blades that cut a full 5-foot swath, and it is especially designed for high-speed, large-area mowing. The right side of this mower extends beyond the wheel, creating good visibility for mowing close to fences and around trees.

The unit's dual V-belt drive, with

a C-belt to each blade, is said to provide plenty of power for tough jobs and to protect the tractor against sudden shock loads.

With access holes in the deck plate, the blades reportedly can be changed in 5 minutes without getting under the mower.

For further information write to the Wood Bros. Mfg. Co., Dept. C&E, Oregon, Ill., or use the Request Card at page 18. Circle No. 74.

## IGLOO

**solves your on-the-job thirst problems**



By strategically placing IGLOO Water Coolers about the job (one for every 6 or 8 men) you will have less "watering time" and more work. IGLOO's built-in cleanliness pays off in employee relations, too.

When you order water coolers, specify IGLOO because:

- It's been proven in use—thousands of times
- It's PERMALINED and has easy-to-clean, round inside bottom
- It's corrugated for greater strength
- Its recessed spigot won't be knocked off

**IGLOO** the world's No. 1 Water Cooler is available in 23 sizes and models—with one exactly for your job.



For more facts, use Request Card at page 18 and circle No. 313

### Black blasting powder, pellet powder offered

The Austin Powder Co. announces the availability of "B" black blasting powder and pellet powder.

Black blasting powder is offered in FF, FFF, and FFFF grain sizes in 25-pound kegs. Pellet powder is of the standard type and is available in 1½ × 8-inch, 1½ × 8-inch, and 1½ × 8-inch sticks packed in 50-pound boxes.

Black powders are used in open work where a slow heaving action is desirable. They are usually ignited with safety fuse or electric squibs.

For further information write to the Austin Powder Co., Dept. C&E, 450 Rockefeller Bldg., Cleveland 13, Ohio, or use the Request Card at page 18. Circle No. 60.

### Trailer of 8-ton capacity for smaller equipment

A new 8-ton-capacity trailer designed for hauling such equipment as tractors and small rollers is offered by Talbert Trailers, Inc.

Known as Model TF-8, this trailer features a removable ball-hitch assembly with a heavy-duty jack leg for easy, one-man hitch removal and attachment. The unit's design permits front or rear-end loading. Deck dimensions are 23×8 feet. Width between the wheels is 78 inches. Loaded deck height is 18 inches.

For further information write to Talbert Trailers, Inc., Dept. C&E, 7950 W. 47th St., Lyons, Ill., or use the Request Card that is bound in at page 18. Circle No. 101.

### Curb-building machine is versatile unit

The Iowa Construction Equipment Corp. has available a new machine for pouring curb and gutter, and for widening slabs up to 10 feet.

Designated Curbmaster, the unit is designed for one-man operation and one-pass production. Additional heads are available for cutting and compacting subgrade.

For further information write to the Iowa Construction Equipment Corp., Dept. C&E, Cedar Falls, Iowa, or use the Request Card at page 18. Circle No. 81.



### GOOD ROADS "ODELL" SPREADER with automatic shut off gate

### ...for asphalt and aggregate spreads up to 8-inch depths

Operated by only two men, contractors report savings up to 50% on average jobs with the "Odell". Spreads asphalt, gravel, coarse slag or stone, limestone, cinders, and other base material (up to 4" in diameter) to 8" in depth. Adjustable for spread widths up to 10 feet.

Accurate spread depth is controlled by the exclusive "floating" strike-off bar with new crown adjustment, mounted on runners independent of the roller and hopper. Automatic shut-off eliminates dribble and material pile-up at end of each pass.



For more facts, use Request Card at page 18 and circle No. 314

### SAFE • SPEEDY • DEPENDABLE

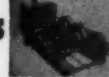
**Derricks** For every contractor's need —Stiff-Leg, Guy Line, Setter, A-Frame, Pole and Tripod, Roofers' Circle Swing Derricks... hand and/or power operated. Proved performers on every type of job. Safe and dependable.



**Sasgen**

### Hoists

Made to fit your requirements—large or small. Complete units, like the Liftomatic, which reaches up to 90 ft., carries 1200 lb. load with electric or gasoline power—or Contractors' Drum Hoist Units, single or double drum, with capacities from 500 to 5500 lb. single line pull. Optional power.



### Winches

From U.L. approved safety scaffold winches to heavy-duty hand-powered winches that will take from 400 to 40,000 lb. loads, Sasgen has a complete line to handle your job quickly and safely. You can't buy a better winch!



Handled by Leading Equipment Distributors Everywhere  
**Sasgen DERRICK COMPANY**  
3127 W. GRAND AVE. • CHICAGO 22, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 315

CONTRACTORS AND ENGINEERS



## Two wheel-type tractors offered in new series

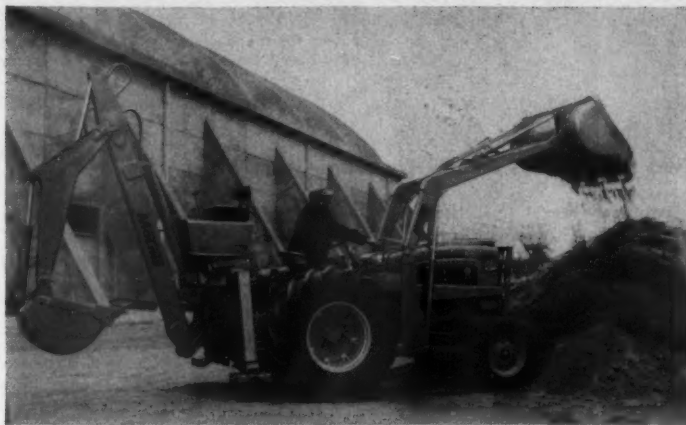
A new series of wheel-type tractors, known as Big Mo, is announced by the Minneapolis-Moline Co.

Powered by a 206-cubic-inch Moline-built engine, the Big Mo 500 develops 56 bhp on gasoline and 50 bhp on diesel fuel, at 1,750 rpm. The Big Mo 600 develops 60 bhp on gasoline at 2,000 rpm. Both tractors have heavy-duty axles and frame to handle any highway and construction attachments including dozer blades, crane hooks, mowers, backhoes, loaders, and several types of buckets including ejector, trench, bell-hole, etc. The five forward speeds on both

models range from 2.63 to 14.57 mph; the five reverse speeds, from 3.29 to 18.22 mph. Hydraulic power steering is standard.

The loader bucket capacities are  $\frac{1}{2}$  yard on the 500 model and  $\frac{3}{4}$  yard on the 600 model. Lifting capacity is 2,000 pounds on the 500 and 4,500 pounds on the 600. Lift height is 10 feet 7 inches on the 500, and 10 feet 10 inches on the 600.

For further information write to the Minneapolis-Moline Co., Dept. C&E, 130 Ninth Ave. S., Hopkins, Minn., or use the Request Card at page 18. Circle No. 80.



The Big Mo 500, a 56-bhp tractor with backhoe and loader, has a Moline-built 206-cubic-inch engine.

## Heating element offered for asphalt curb machine

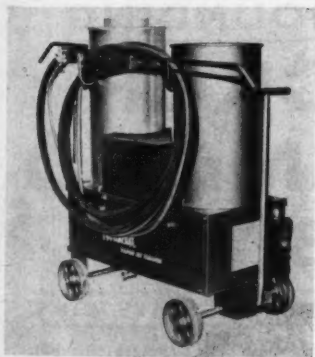
The Miller Spreader Corp. has introduced a new compaction chamber heater designed for mounting on the MC-500 Curbilder, and said to permit faster warmup and more even compaction in any weather. The element can be moved right or left, and is for use when the Curbilder is extruding asphalt material only.

Another feature of the propane-fired heater unit is its easy removal for other jobs such as preheating asphalt curb forms for smoother curbing finish, or for heating other asphalt tools, such as lutes, hand smoothers, scrapers, and finishers.

For further information write to the Miller Spreader Corp., Dept. CH-550, Dept. C&E, 120 Pike St., Youngstown, Ohio, or use the Request Card that is bound in at page 18. Circle No. 47.

## Announce steam cleaner with increased capacity

The new Northeast Model HD120 Vapor Jet cleaner represents a 20 per



cent increase in capacity over the previous Model HD100.

The new model delivers 120 gph at 120 pounds of steam pressure, and features the same simplified operation and siphon-gun principle of introducing the cleaning compound that is incorporated in all Northeast models.

For further information write to Northeast Industries, Inc., Dept. C&E, 282 Greenwood Ave., Midland Park, N. J., or use the Request Card that is bound in at page 18 of this issue. Circle No. 45.

# Contractor Saves \$32,000 on ONE job! —with MAGINNISS VIBRATOR ATTACHMENT

Dale Benz, Inc. of Phoenix, Arizona, general contractor for the U.S.M.C. Supply Depot at Yermo, California, saved approximately one-half sack of cement per yard on 65,000 cu. yds. of concrete floor in the repair shops and pavement in the parking area.

This \$32,000 saving was on concrete specifications which called for 5.8 sacks of portland cement per yard with approved internal vibration — or 6.3 sacks if internal vibration was not used.

On the Yermo job, the approved MAGINNISS Hi-lectric Vibrator Attachment was mounted on the concrete spreader. On jobs of limited runs between equipment moves, where a spreader cannot be used economically, the same Maginniss Attachment can be mounted on the concrete finisher in front of the front screed. There it will assist in spreading the mix, as well as perform its primary function of INTERNAL vibration.



### DEEP-PENETRATING VIBRATIONS

With MAGINNISS Vibrators, the vibrations travel outwardly at right angles from the vibrator head. Thus, by setting the heads at proper position — HORIZONTAL OR ANGLED — even distribution of the vibratory action is assured, resulting in densest concrete possible throughout ANY DEPTH slab.



## MOTOR IN HEAD... packed with power!

The MAGINNISS Vibrator has only two moving parts; no brushes, commutators, gears, flexible shafts, complicated air or fluid drive mechanisms to require costly repair or replacement. The 180 cycle induction motor—located in the vibrator head

—is cooled by the surrounding concrete. The angled or horizontal positioning of the vibrators below the surface of the slab assures a uniform mixture of aggregate and mortar from base to surface regardless of depth. The MAGINNISS Vibrator handles the stiffest mixes easily.

You too can get improved quality and increased production on airports and highways, as well as structural jobs, with MAGINNISS Hi-lectric Vibrators. Fill out and return the coupon, or call your Maginniss Distributor—he's listed in 85 cities under "Contractors Equipment" in the Yellow Pages.

**MAGINNISS POWER TOOL CO.**  
154 Distl Avenue, Mansfield, Ohio  
**RETURN THIS COUPON TODAY!**

- Maginniss**  
**HI-LECTRIC**  
**POWER**  
**TOOLS**
- ☐ CONCRETE STREET, HIGHWAY, and AIRPORT PAVING VIBRATORS
  - ☐ VIBRATORY SCREDS
  - ☐ STRUCTURAL VIBRATORS (180 Cycle Heavy Duty)
  - ☐ STRUCTURAL VIBRATORS (AC-DC Light Duty)
  - ☐ PENCIL VIBRATORS
  - ☐ VIBRATORY SOIL COMPACTORS

MAGINNISS POWER TOOL CO.

Dept. CE-70, Mansfield, Ohio

Date

Please send me literature on items checked at left.

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Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

For more facts, use coupon or Request Card at page 18 and circle No. 316

Power for the 6-wheel Mack B-61SE is supplied by a diesel engine developing 170 horsepower.

## Two new trucks added to heavy-duty line

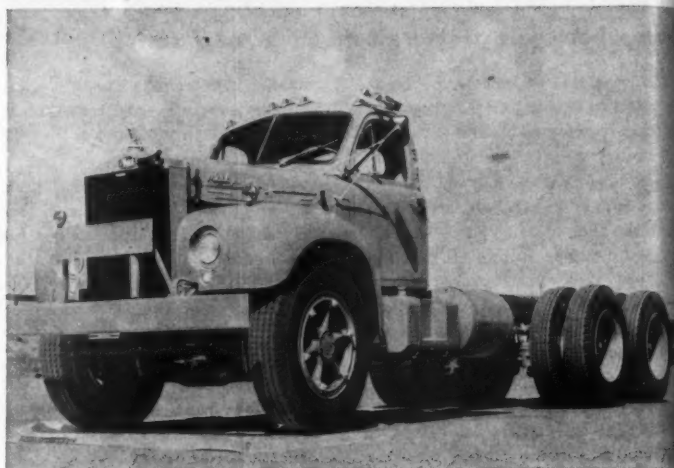
Two new 6-wheel diesel trucks, especially designed for heavy-duty service over rough terrain and in unusually severe conditions, are announced by Mack Trucks, Inc., Plainfield, N. J.

The Model B-613SE is powered by the company's turbocharged ENDT 673 diesel engine, which develops 205 horsepower at 2,100 rpm. The B-61SE offers a naturally aspirated version

of the same engine developing 170 horsepower.

The frame, cab, and entire front end of these trucks have been reinforced to far exceed normal dumper and hauling requirements.

For further information write to Mack Trucks, Inc., Dept. C&E, 1355 W. Front St., Plainfield, N. J., or use the Request Card at page 18. Circle No. 31.



Austin-Western Roller-Compactor

## Saves cost of second machine!

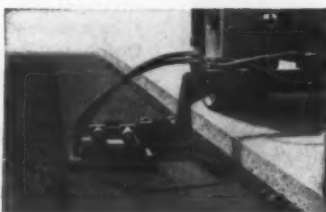
"Our A-W Roller Compactor does the work of two pieces of compaction equipment, saving the cost of an additional machine. It makes possible the placement of a 10-in. stone base in a single course.

"On one hilly highway job we encountered an unusually slippery limestone aggregate. The A-W Roller-Compactor was the only equipment we had which could compact loose material on grades of 1% or more under its own power. Without it, we would have had to tow rollers up hill to get the job done."

—W. O. Faylor, Middlecreek Construction Co., Winfield, Pa.

Three-shoe vibratory unit attaches to Austin-Western and most other makes of 3-wheel rollers. Vibration penetrates to bottom of lift, reacts upward and effectively keys low-level material for maximum consolidation in fewest passes. Compactor attachment combines with 3-wheel roller to deliver both surface-

sealing static pressure and deep-reaching vibratory action in one pass. Dependable under severest operating conditions; easy to maintain. Learn how you can reduce compaction costs. See your nearby Austin-Western distributor today or write us for facts and figures.



Vibratory widener attachment—for use with Roller-Compactor unit on most makes of 3-wheel rollers. Mounts right or left; ends need for trench roller.

# Austin-Western

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.  
BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 317



## New stabilization plant is high-capacity unit

Capacities in excess of 800 tph are claimed for the new Universal Engineering twin-shaft Thoro-Mix stabilization plant.

The plant offers twin-shaft mixing in a full 9-foot self-lining tub, to comply with modern specifications for stabilized base mix.

Extended shafts with agitating arms eliminate segregation of material as it drops into the 5-cubic-yard hopper at the end of the mixing tub.

The surge hopper is equipped with a fast-action, hydraulic clam-type discharge gate to further eliminate material segregation during the loading of trucks.

Available are heavy support members of structural steel, which provide 8-foot clearance under the discharge hopper. The Thoro-Mix is available with or without wheels.

Also available are metering equipment to mount on the feeding con-



Available with or without wheels, the Thoro-Mix plant offers twin-shaft mixing in a full 9-foot self-lining tub.

veyors for metering additives such as calcium chloride or cement; steel bins of various sizes; and feeding conveyors of all types.

For further information write to the Universal Engineering Corp., Dept. C&E, 625 C Ave. N.W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 85.

## ANNOUNCING ACKER DIAMOND BITS

AN ALL-NEW QUALITY LINE



Now, a quality line of moderately priced diamond bits takes its place in the distinguished Acker line of drilling equipment.

Acker manufactures and stocks a variety of diamond bits including a complete line of thin-wall diamond bits.

Acker diamond bits will do the most exacting job better and more economically. They're expertly designed and crafted of the finest materials and workmanship in Acker's new, ultra-modern plant. Complete inspection and quality control plus Acker's impeccable reputation for reliability and dependa-

bility are your guarantee of satisfaction. Try an Acker bit on your next job, you'll be pleased with its rugged construction and ability to stand-up under the most severe conditions.

# FREE

Write today for free 28 page diamond bit and core barrel Bulletin 10 C&E



# ACKER DRILL CO., INC.

P. O. Box 830  
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Manufacturers of a complete line of: Soil Sampling Tools • Rotary Earth Augers • Diamond & Shot Core Drills • Earth Boring Equipment • Diamond Bits • Drilling Accessories & Supplies

For more facts, use Request Card at page 18 and circle No. 318

CONTRACTORS AND ENGINEERS



Bucket sizes of the new Little Giant trench-hoe attachment range from  $\frac{1}{8}$  to  $\frac{3}{4}$  yard, and digging depths from 15 to 21 feet.

### Trench-hoe attachments for smaller excavators

Little Giant Crane & Shovel, Inc., announces the availability of optional trench-hoe attachments with hydraulically actuated buckets for all models manufactured by the company.

Bucket sizes range from  $\frac{1}{8}$  to  $\frac{3}{4}$  yard.

The hydraulic cylinder is operated through an electro-servo valve giving push-button control. The articulated bucket allows the operator to adjust the pitch of the bucket instantaneously. This permits bucket adjustment that gives deep digging with greater production at maximum depths, the manufacturer points out. It makes possible straight side excavation, and undercutting and cleaning around pipes and obstructions is said to be fast and simple.

The attachment offers digging depths from 15 feet 1 inch with the  $\frac{1}{8}$ -yard Model L up to 21 feet 1 inch with the heavy-duty  $\frac{3}{4}$ -yard Model 48. The trench-hoe boom is boxed around the heavy H-beam backbone to insure greater strength for deeper digging and longer reach.

For further information write to Little Giant Crane & Shovel, Inc., Dept. C&E, E. 16th and Howard Drive, Des Moines 13, Iowa, or use the Request Card at page 18. Circle No. 36.



How to fill a rut or dip in concrete roadways quickly yet with water-tight permanence was demonstrated recently by a remedial project on the Richmond-San Rafael Bridge in California. In need of repair was a dip in the bridge roadway caused by failure of mortar surfacing.

Up to  $\frac{3}{4}$  inch deep and 10 feet wide, the dip stretched 36 feet across several lanes. Conventional repair techniques would have required too much time, as well as a considerable amount of labor. To solve the problem, the engineers employed a polysulfide modified epoxy mortar—a mixture of the adhesive and aggregate. Lanes had to be closed to traffic for only a few hours. For further information write to the Thiokol Chemical Corp., Dept. C&E, 780 N. Clinton St., Trenton, N. J., or use the Request Card at page 18. Circle No. 32.



Hydraulically controlled Model 210 A-W crane inches 18-in. cast-iron water main into position in San Diego County, Calif.

### How A-W crane speeds pipelaying

"The more we use our 3-year-old Austin-Western hydraulic crane, the more uses we find for it," states B. K. Stoneman Sons, Inglewood, Calif., mechanical contractor.

"For instance," they add, "it is excellent for pipelaying. Hydraulic controls permit placement of heavy pipe with speed and precision. The telescoping boom lets the operator work pipe forward for a perfect joint without even moving the machine. All-wheel drive and steer mean exceptional maneuverability and traction on any surface. The A-W

is a real time and money-saver!"

Austin-Western now offers a complete line of lift, carry and place equipment. 5 models—capacity ranges up to 11 tons. Wide choice of optional equipment for added versatility. Available self-propelled, truck or stationary mounted. No other crane offers you all of the profitable advantages and quality construction features of an Austin-Western. Let us prove this to your satisfaction. Write for all the facts or ask your nearest A-W distributor.

## Austin-Western

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 320



ASK THE MAN ON THE JOB . . . HE WOULDN'T BE WITHOUT HIS HORTON!

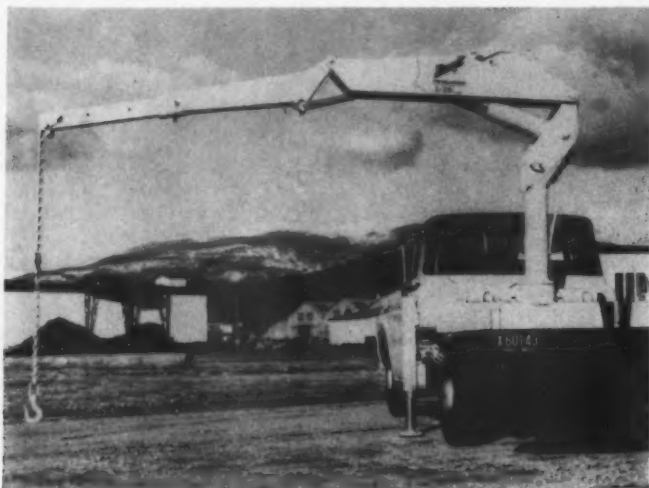
Horton Water Coolers keep water colder, longer — keep men happier on the job. Thousands of city departments, utility companies, service companies and contractors use Horton Water Coolers exclusively.

Get the facts from your wholesaler or see our page in *Municipal Index*.



HORTON EQUIPMENT CO.  
P. O. Box 2611  
Houston 1, Texas

For more facts, use Request Card at page 18 and circle No. 319



Powered by the truck engine, the Power Arm L-20 has a lifting capacity of 5,500 pounds. Hydraulic stabilizing jacks permit side lifts.

#### Hydraulic truck crane for material handling

A new material-handling truck lift called the Power Arm L-20 is announced by Skagit Steel & Iron Works.

The unit is designed to be mounted on a standard 1-ton or larger truck frame and is hydraulically operated. Power for the lift is furnished by the truck engine. According to the manufacturer, the unit also may be operated with an outside power source if mounted on other mobile equipment or in stationary locations.

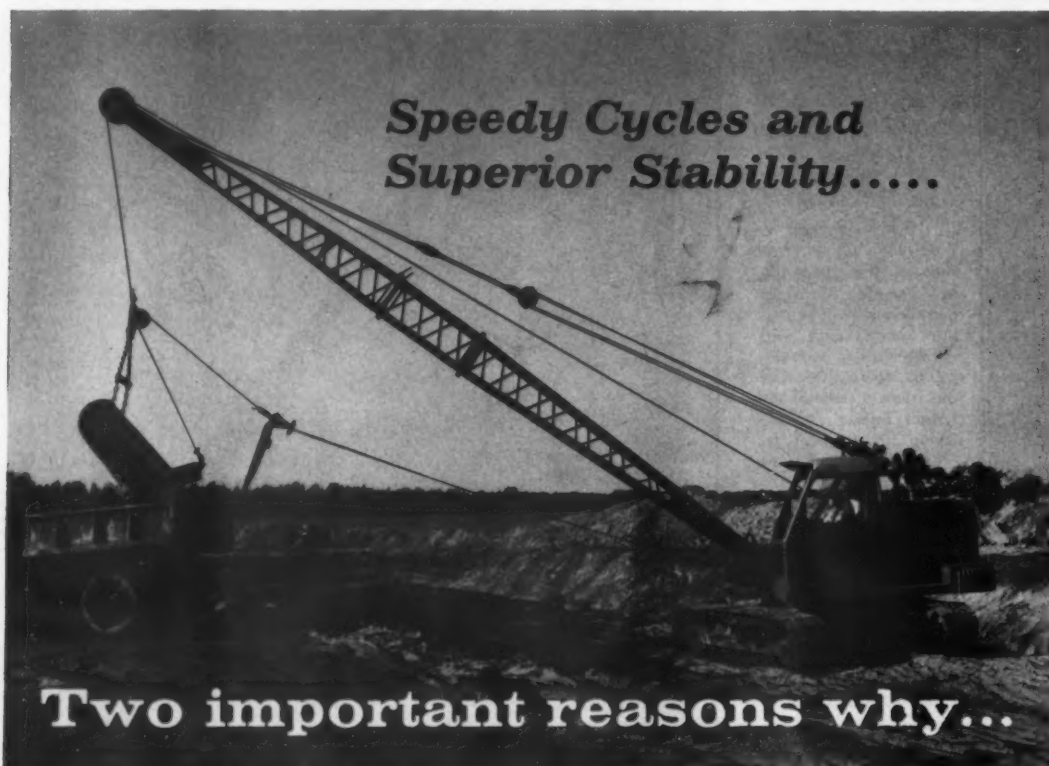
When mounted on a standard truck

frame, the Power Arm will lift to a height of 20 feet above the ground. It may lift from below ground level by use of a chain and hook installed as standard equipment at the end of the lifting arm. The chain is fully adjustable.

This new truck crane has a lifting capacity of 5,500 pounds and can extend to 13 feet. To enable the unit to make side lifts, the Power Arm is equipped with hydraulic stabilizing jacks that keep the weight of the lift off the truck frame. The standard Power Arm has a boom swing of 180 degrees; the lift may be equipped to swing a full 360 degrees.

For convenience of operation, dual controls are located on either side of the unit.

For further information write to Skagit Steel & Iron Works, Dept. C&E, Sedro Woolley, Wash., or use the Request Card at page 18. Circle No. 78.



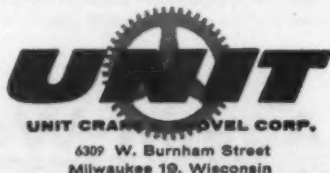
## **UNIT** gives you more **Earning Power on dragline jobs**

You'll find two essentials of profitable dragline service combined in a UNIT — speedy operating cycles, through full use of power, and outstanding stability. You save power and gain speed with UNIT direct-in-line drive from engine to main machinery. Power is transmitted through a worm drive with minimum loss due to friction. This is one of many UNIT built-in values that pay off in greater job output.

UNIT extra long crawlers and wider axles and shoes provide perfect balance, too. Stability is superior . . . you can work faster without continuous tipping on long or low boom work.

A UNIT DRAGLINE gives you these two important advantages . . . and many more. You get a one-piece cast main machinery gear case with all gears, shafts, and bearings operating in an oil bath; automatic traction brakes; twin hook rollers; and all disc-type operating clutches.

Your UNIT dealer has full information on ½ to ¾-yd. draglines, fully convertible to other front ends. See him soon for the full UNIT story.



SHOVELS: ½ to ¾ YDS. • HOES: ½ to ¾ YDS. • CRANES: 5½ to 40 TONS • DRAGLINES: ½ to ¾ YDS.

For more facts, use Request Card at page 18 and circle No. 321

#### New form for concrete is strong, lightweight

A new Atlas Compo form for concrete building construction has been announced by the Irvington Form & Tank Corp. Claimed to be exceptionally strong and lightweight, it is said to make possible faster erecting and stripping.

The panels are built of high-tensile steel frames, reinforced for rigidity, and have reversible plastic-coated plywood surfaces. The largest Compo panel, 2 x 8 feet, weighs only 81 pounds.

According to the manufacturer, the tie system is exceptionally simple and accurate. In addition, stripping can be started at several places without disturbing adjoining forms. This removable-panel feature greatly simplifies the installation of boxes, sleeves, pipes, ducts, and conduits, and provides pouring doors for high structures.

The plywood panels can be reversed without the aid of a jig to give them twice as much usage.

For further information write to the Irvington Form & Tank Corp., Dept. C&E, 100 William St., New York 38, N. Y., or use the Request Card that is bound in at page 18. Circle No. 59.

#### Aluminum chain hoist has improved load brake

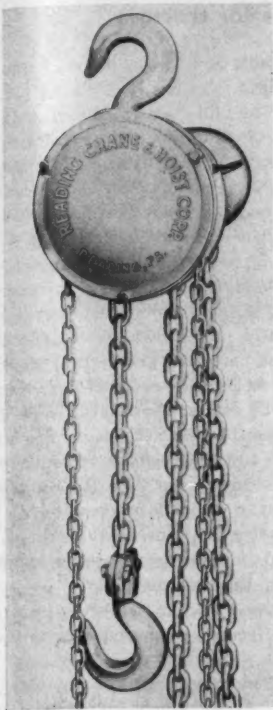
A lightweight aluminum chain hoist featuring a noiseless load brake that permits faster, easier lowering is announced by the Reading Crane & Hoist Corp.

The new load-brake design is said to offer maintenance-free operation and added safety. Danger of accidents caused by worn-out ratchet wheels or lock pawls is eliminated.

Operating features include a light hand chain pull and a load-chain guide that surrounds the load wheel.

CONTRACTORS AND ENGINEERS





so the chain cannot bind, regardless of the pulling angle.

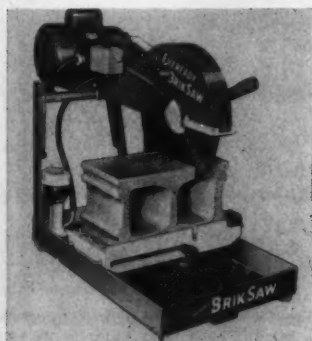
The hoists are available in seven sizes, ranging in capacity from ½ ton to 10 tons.

For further information write to the Reading Crane & Hoist Corp., Dept. C&E, Reading, Pa., or use the Request Card at page 18. Circle No. 87.

#### Add portable model to concrete-saw line

A portable BrikSaw is available from the Eveready BrikSaw Co.

Lightweight and versatile, the unit features the firm's Full-Vue cutting head. It can be quickly and easily set up inside a boiler or kiln, can be



Power for the saw is supplied by a Century 1½-hp continuous-duty motor.

taken up on scaffolding, or operated from the back of a station wagon or pickup truck.

Power is supplied by a 1½-hp continuous-duty Century motor. A dual voltage switch permits quick convertibility from 115 to 230 volts. An electric water pump is also standard.

For further information write to the Eveready BrikSaw Co., Dept. C&E, Dept. 549, 1104 Union Ave., Kansas City 1, Mo., or use the Request Card that is bound in at page 18. Circle No. 68.

For more facts, use Request Card at page 18 and circle No. 322

#### New utility pumps are portable, self-priming

A utility pump that can be primed and ready to work in less than 90 seconds is offered by The F. E. Myers & Bro. Co.

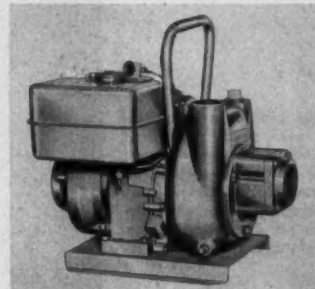
This compact, lightweight, self-priming pump will discharge up to 7,000 gph. Powered by an aluminum engine, it can be lifted and transported easily by one man.

A built-in check valve holds prime. A nonclogging impeller handles water with a high percentage of solids, and a quickly removable suction plate

makes it easy to inspect and clean the impeller. In addition, the impeller can be replaced without removing the pump case.

These pumps are available in two sizes: M-5 (5,000 gph with 1½-inch suction); and M-7 (7,000 gph with 2-inch suction).

For further information write to The F. E. Myers & Bro. Co., Dept. C&E, 80 Fourth St., Ashland, Ohio, or use the Request Card at page 18. Circle No. 62.



Powered by a compact aluminum engine, the utility pump can easily be lifted and transported by one man.



# 5

## Big Advantages of EUCLID'S TC-12 Twin-Power Crawler

Functional "years ahead" design, combined with unequalled power, makes the new series TC-12 the best all-around performer in the big tractor field. Its big power and big performance helps beat the pinch on profits...on every kind of big tractor work. Check these cost-cutting features:

**Twin Engines** with a total of 425 net horsepower... separate Torquatic Drives each consisting of torque converter and semi-automatic transmission...more workability for heavy dozing, ripping, push-loading and towing than any other "super" tractor.

**Independent Track Drives** give the big TC-12 almost unbelievable mobility and maneuverability. With its separate power train and Torquatic Drive, each track can work all the time because its power and speed is individually controlled. Operator has immediate, positive control for quick turns and side slope work.

**Rigid Track Alignment** is constantly maintained because each track is positioned to its main frame...each half of the tractor oscillates on a big diameter transverse shaft which provides maximum traction in rough going and increases track life. The tractor can be easily split into two halves for transport from one job to another.

**Fast, Easy Operation** is achieved by the separate Torquatic Drives and simple controls. There's no master

clutch...changes from one speed range to another are made under full power. Excellent visibility front and rear, and comfortable operator's seat, help to increase productive capacity. Good machine balance and stability, and "fast on its feet" performance, make the TC-12 unequalled for any big tractor work.

**Service Accessibility** that cuts downtime to a minimum is a feature of TC-12 design. Unitized assembly of converter, transmission and drive case components permits fast servicing or replacement without major tear-down of other parts. For example, both drive sprockets can be removed or replaced in about one-third the time required for the same work on a competitive big tractor. Planetary final drives can be serviced without breaking track or pulling sprocket.

Whatever the job, if it's a big tractor application the Euclid TC-12 will bring the best return on investment... the Euclid dealer in your territory can prove it!

EUCLID Division of General Motors, Cleveland 17, Ohio



## EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

The side-dozor blade is shown ready to retract and remove 11 inches of material under the guardrail. This type of cleaning reportedly can be handled at a rate up to 600 feet per hour.



#### Side-dozing attachment available for tractors

A versatile tractor attachment that can be used in building and maintaining roads and for earthmoving is announced by the Easley Engineering & Mfg. Co.

Known as the Walker-Cline Side-dozor, it is designed to perform work usually done by hand labor, such as cleaning or grading under highway guardrails, backfilling of shallow trenches, finish-grading curb areas, and trimming or grading around culverts. According to the manufacturer, average guardrail or ditch cleaning can be done at a rate of 400 to 600 feet per hour, depending upon the

quality and volume of material to be moved.

The unit is designed to fit most wheel tractors, and the entire assembly may be attached or removed in 20 minutes. This change can be done in the field since it requires only a hammer and a pair of pliers.

All parts are readily accessible for maintenance and require a minimum of tools and knowledge to service.

The unit is hydraulically operated. The horizontal and vertical positioning or motions are controlled by separate hand valves. The attachment is suspended beneath the tractor in a manner to permit pulling or pushing the load to or away from the side of the tractor, which is accomplished by reversing the blade. Maximum reach of the unit is approximately 4 feet outside the tire tread.

For tractors without hydraulic equipment, a conversion kit is available.

For further information write to the Easley Engineering & Mfg. Co., Dept. C&E, 2440 Goodrich Ave., Farmdale 20, Mich., or use the Request Card that is bound in at page 18. Circle No. 67.

#### Tack-coat spreader for asphalt curbing

The Miller Spreader Corp. has introduced a new tack-coat spreader.

The Tack-Coater Model TC-100 deposits a smooth, even tack coat over surfaces in preparation for laying extruded asphalt curbing. Varying



The Tack-Coater Model TC-100 deposits a smooth, even tack coat over surfaces in preparation for laying extruded asphalt curbing.

widths are easily adjusted by turning the swivel-hung spraybar to angles desired, based on curb-form widths to be machine-laid.

The company points out that the Tack-Coater eliminates a tedious job formerly done by hand and does a much more efficient application. One man can operate the unit.

For further information write to the Miller Spreader Corp., Dept. TC-100, Dept. C&E, 120 Pike St., Youngstown, Ohio, or use the Request Card that is bound in at page 18. Circle No. 63.

### Interim Progress Report on CF&I-Wickwire's new wire rope

# DOUBLE GRAY-X

## Falcon Seaboard Drilling Company orders carload

The first company to use a prototype of Double Gray-X was the Falcon Seaboard Drilling Company of Tulsa. Aware that modern drilling practices demand the best possible equipment, Falcon Seaboard tested Double Gray-X on some of their rotary drilling rigs, an operation that subjects ropes to extreme abuse. Mr. Jack Starr, Vice President in Charge of Drilling, commented, "The results obtained from original tests with Double Gray-X prototype led to our decision to order a carload of this improved product. Falcon Seaboard insists on the best products, in order to serve the oil industry in accordance with today's modern standards."

#### The Secret of Longer Rope Life

CF&I-Wickwire engineers, after intensive research, discovered that by using an entirely new wire drawing technique—including the use of Molybdenum\* in the lubricant—the characteristics of the wire rope were greatly improved. This method creates a permanent molecular jacket around the individual wires that provides these benefits:

- reduced friction between the individual wires in each strand of Double Gray-X during service

- minimized surface imperfections in the wires of Double Gray-X
- wires have greater resistance to abrasion, crushing and bending

If you are a user of wire rope, you can increase the safety of your operation and reduce equipment downtime with Double Gray-X. Made in a wide variety of sizes and constructions, Double Gray-X is recommended for all types of equipment. For complete details on this new wire rope, call the nearest CF&I sales office or see your local distributor.

#### Greater Strength

The molecular shield around this new premium wire rope gives Double Gray-X longer life. In addition, you get the extra strength for which Double Gray has always been famous. Made of extra improved plow steel with an Independent Wire Rope Core of the same material, this rope gives 15% higher breaking strength than the catalog breaking strength of an improved plow steel rope with IWRC.

\*Registered Trademark of Climax Molybdenum Co.

7022-4

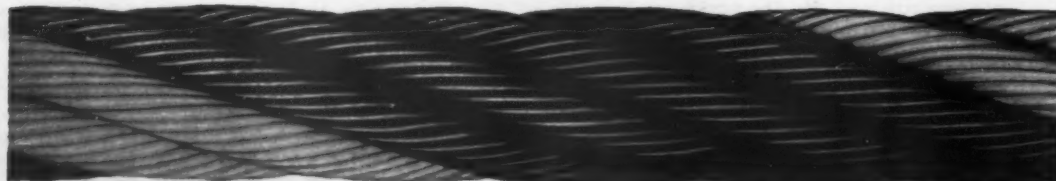


## WICKWIRE ROPE

THE COLORADO FUEL AND IRON CORPORATION

In the West: THE COLORADO FUEL AND IRON CORPORATION — Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Farmington (N. M.) • Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Odessa (Tex.) • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Tulsa • Wichita

In the East: WICKWIRE SPENCER STEEL DIVISION — Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New Orleans • New York • Philadelphia



For more facts, use Request Card at page 18 and circle No. 323





The larger Ulrich Domor Model 64 elevating grader features 48-inch belt, 36-inch disk, conveyor lengths up to 31 feet, and 50 to 60 per cent more production.

### New elevating grader is high-production unit

An elevating grader with a loading capacity up to 900 cubic yards per hour is announced by Ulrich Mfg. Co.

Called the Domor Model 64, the machine features a 48-inch belt, 36-inch disk, and higher belt speed, and is designed to match the production capacity of the 150-hp Caterpillar No. 14 motor grader.

An entirely new mechanical arrangement on the Model 64 prevents accidental damage of the loading belt with the plow disk during operations, according to the manufacturer.

The conveyor frame members and sideboards are of one-piece construction, giving much greater frame strength, without increase in weight. Conveyor lengths up to 31 feet are available.

For further information write to the Ulrich Mfg. Co., Dept. C&E, Roanoke, Ill., or use the Request Card at page 18. Circle No. 29.

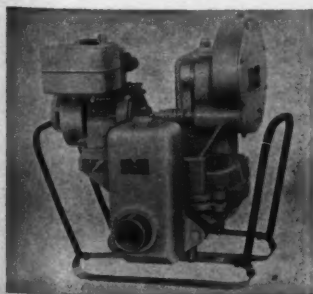
### Diaphragm pump rated at 4,300 gph

The Midland Products Co. has available a lightweight diaphragm pump with 3-inch connections and a capacity rating of 4,300 gph.

This pump is equipped with a 3-hp gasoline engine, and is constructed of aluminum alloy, with shafts and gears of special material to withstand wear. It is mounted on vibration-proof spring skids.

Midland diaphragm pumps are equipped with suction and discharge air chambers that eliminate "jerking" of suction hose and produce smooth flow from discharge lines.

For further information write to the Midland Products Co., Dept. C&E, Route 17, Mahwah, N. J., or use the card at page 18. Circle No. 37.



Designed to handle stiff, harsh concrete mixes, the screeds are offered in 8, 10, and 12-foot widths.



### New vibratory screeds for stiff, harsh mixes

New, improved vibratory screeds, manufactured by Vibro-Plus Products, Inc., are designed to handle stiff, harsh concrete mixes.

The screeds are said to be ideal for bridge slabs, small road jobs, and precast or prestressed hollow-core

slabs. They are available in 8, 10, and 12-foot widths, and are powered by a gasoline engine or electric motor.

For further information write to Vibro-Plus Products, Inc., Dept. C&E, Stanhope, N. J., or use the Request Card at page 18. Circle No. 41.

## The Key To Longer Line Life . . .

McKissick Blocks with all sheave grooves completely machined and gauged for proper groove size and shape.

Grooves flame hardened for optimum performance characteristics.

... Always in perfect wind  
... Always present a smooth properly sized surface to the line.

BE SPECIFIC  
GET MCKISSICK

"THE BEST BLOCK  
FOR YOUR PURPOSE"



SNATCH  
BLOCKS



CRANE  
BLOCKS



CONSTRUCTION  
BLOCKS

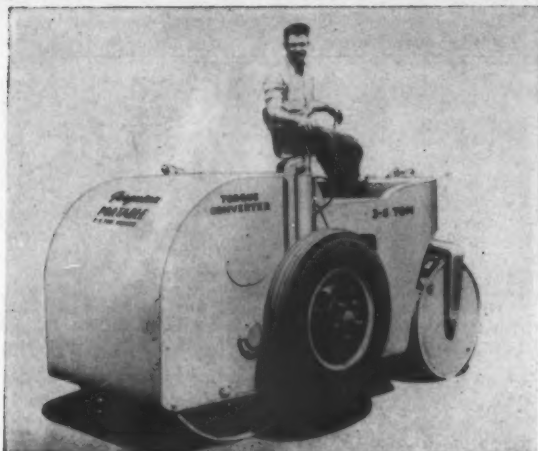
Etched Section  
of a McKissick  
Flame Hardened Sheave

# MCKISSICK

MCKISSICK PRODUCTS CORPORATION

Box 2496 Tulsa, Oklahoma

For more facts, use Request Card at page 18 and circle No. 324



The pneumatic wheels, which permit the roller to be towed rapidly, are raised and lowered hydraulically.

### Rollers now equipped with torque converters

The Shovel Supply Co. announces that its 3 to 5-ton and 4 to 6-ton maintenance rollers are now equipped with heavy-duty 2-speed transmissions and torque converters.

These portable rollers are easily towed at high speed from one job location to another on their own pneumatic wheels, which are raised or lowered by power-driven hydraulic cylinders attached to each wheel. The front end of the roller is also hydraulically raised for attaching to a truck for trailing. Hydraulic steering is another feature.

For further information write to the Shovel Supply Co., Dept. C&E, P. O. Box 1369, Dallas 21, Texas, or use the Request Card that is bound in at page 18. Circle No. 102.

### Offer submersible pump with heads to 40 feet

The Aqua-Cor self-priming submersible pump, available with 10, 20, 30, and 40-foot heads, is designed to operate continuously and unattended, with minimum strain and wear. Output ranges from 30 to 180 gpm.

The unit is said to operate on a single-phase 110-volt line, with double seals for dry operation.

For further information write to the Welch Electric Co., Dept. C&E, 1221 Wade St., Cincinnati 14, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 16.



### New scarifying units for concrete grinders

The Equipment Development Co. has available scarifying units for its Models 2EC and 2GC concrete grinders.

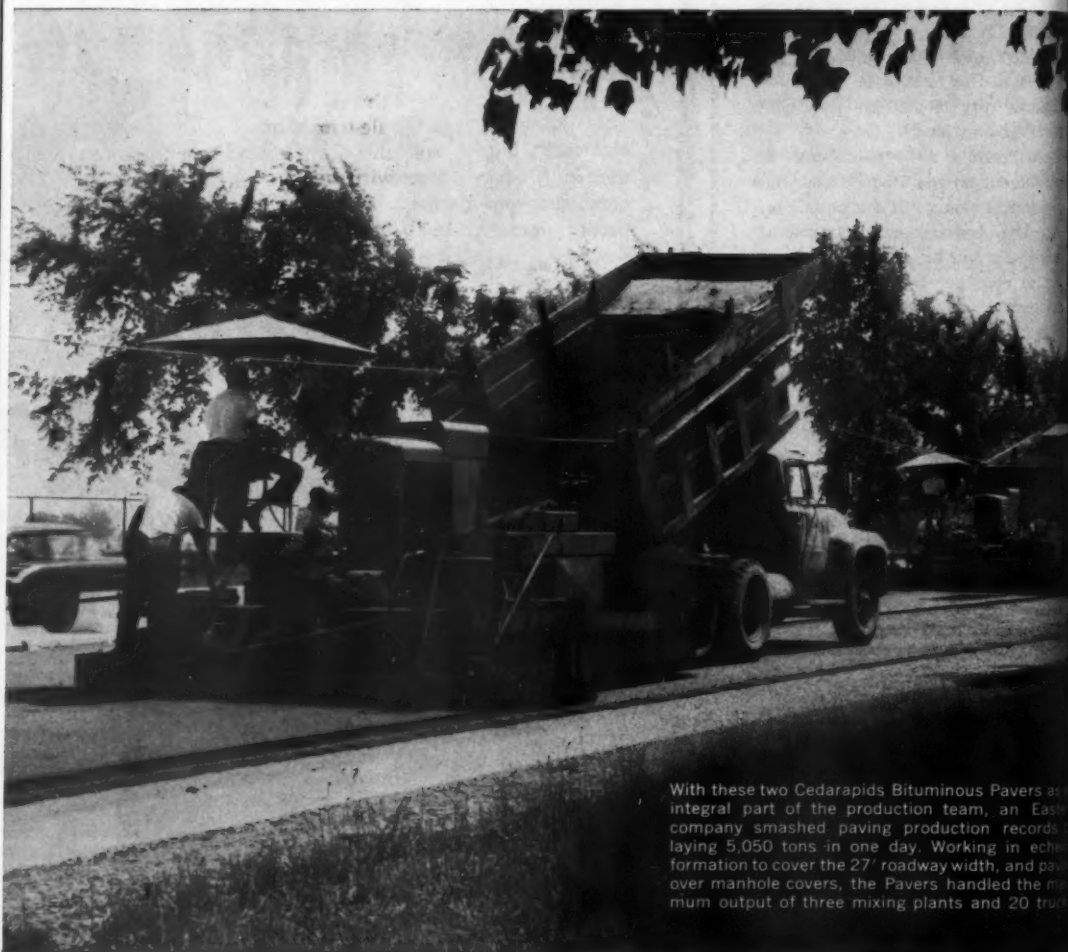
Constructed with extra-hard high-carbon steel cutters, the new scarifier units are designed to chip away concrete surfaces.

Each unit consists of a steel case and a disposable cutter. Six units comprise a set and are held in place on the circular disks by wooden wedges.

The full set of 96 wheels makes cutting down ridges, joints, and high spots on highway or bridge surfaces easy and simple. The units are also recommended for bushing the surface of slabs where a topping is to be poured, or for cutting down a slab which was poured too high.

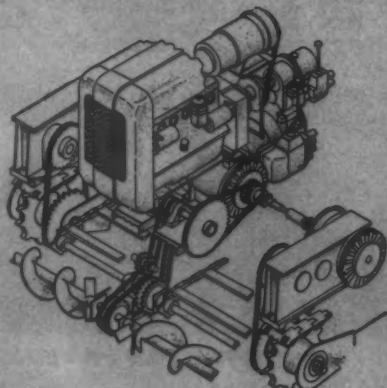
For further information write to the Equipment Development Co., Dept. C&E, 2700 Garfield Ave., Silver Spring, Md., or use the Request Card at page 18. Circle No. 90.

## Bid tight paving schedules with confidence



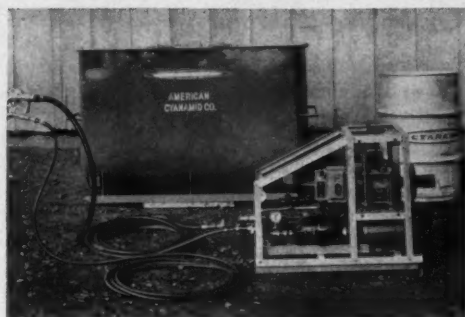
With these two Cedarapids Bituminous Pavers as an integral part of the production team, an East company smashed paving production records, laying 5,050 tons in one day. Working in echelon formation to cover the 27' roadway width, and paving over manhole covers, the Pavers handled the minimum output of three mixing plants and 20 trucks.

### Cedarapids Engineered for lowest cost per ton



This is a typical illustration of the simplicity of Cedarapids Paver design which reduces maintenance costs. Note that only 6 chains and 2 V-belts are used on the Cedarapids Paver to reduce the number of wearing parts and mechanical drive linkages required. Other leading pavers have from 12 to 17 chains and from 5 to 10 V-belts to maintain. Other Cedarapids cost-cutting features include: a simple, trouble-free electrical system for all-automatic controls; easy accessibility of all parts; fewer parts for crawler track assembly and self-cleaning features reduce crawler maintenance; powerful magnetic clutches permit instant contact of clutch plates to reduce costly wear; rugged frame construction withstands impact of dumping heavy loads and the stresses of carrying the loads over uneven ground. Ask about the many other features that help reduce downtime.





### Announce new concept in soil stabilizing, grouting

The American Cyanamid Co. announces "a new concept of soil stabilization and grouting"—the development of a chemical that turns water into a stiff continuous gel in a controlled period of time.

Known as AM-9 chemical grout, it is designed for application in the mining and construction industries to prevent various types of water seepage.

Available as a dry white powder, AM-9 is applied in a nonviscous solu-

tion said to penetrate any mass through which water flows.

After the addition of a catalyst, an aqueous solution of AM-9 is injected or percolated through the soil or rock formation. Gelling time is controlled from a few seconds to several hours, depending on the type of catalyst used. The nature of the reaction is such that the viscosity of the solution remains essentially that of water until just before the gel forms, states the manufacturer.

The gel not only prevents the passage of water through the mass but also binds together the particles of soil, sand, or loose rock, and provides a moderate increase in shear strength. It is particularly effective for solidifying weak, granular soil masses during tunneling operations, the sinking of caissons, and in many types of shafts and excavations.

The equipment for applying the chemical generally consists of two positive displacement pumps designed to handle AM-9 solutions and catalyst solutions separately.

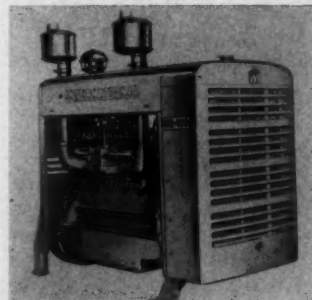
For further information write to the American Cyanamid Co., Dept. C&E, 30 Rockefeller Plaza, New York 20, N. Y., or use the Request Card that is bound in at page 18 of this issue. Circle No. 38.

### Three carbureted engines added to 6-cylinder line

Three new units have been added to the International line of 6-cylinder carbureted engines.

The engines are the UR-372, UR-450, and UR-501 engines, which feature downdraft carburetion with velocity governor.

Maximum horsepower ratings of



these power plants are 165 at 3,200 rpm for the UR-372; 182 at 3,000 rpm for the UR-450; and 212 at 3,000 rpm for the UR-501.

Other features include full-flow oil filter for improved filtration and lengthened bearing life; ease of starting and dependable long-life ignition through improved distributor drive and high-capacity coil and even-operating temperatures; and a new high-capacity water pump and revised water-circulation system.

For further information write to the Construction Equipment Division, International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 149.

For more facts, use coupon or Request Card at page 18 and Circle No. 325

## CEDARAPIDS Bituminous Pavers

### Give you more GO time—less downtime

Shorter your paving season, the more important go time is. Your profit lies in equipment that works all day, every day, with the absolute minimum of downtime.

That's what you get with a Cedarapids Bituminous Paver on the job—steady day-after-day work that gets off the miles of perfect mat, lets you bid low on the tightest schedules with confidence in your ability to get the job done on time and at a nice profit. Owners from all over the country give the same reports:—"Minimum maintenance with the Cedarapids Paver." "No downtime during the working season." "We finished the job ahead of schedule."

And you get more than low-cost-per-mile paving. You get fast, schedule-trimming speed. The vibrating screed "irons" the mix into a smooth, uniform, high density mat with no voids or tears even at 102 fpm operation. According to all reports, this machine is an operator's dream . . . it's so automatic it almost operates itself.

There are dozens of other profit-benefits engineered into the Cedarapids Bituminous Paver. Be sure to investigate each one and compare with other pavers. Your Cedarapids Dealer will gladly give you all the facts. See him today.

### Complete your Paving Package with CEDARAPIDS

#### Bituminous Mixing Plants

Here's the way to supply your Paver with mix produced at lowest cost per ton. Use the Cedarapids Bituminous Mixing Plant model best suited to your production needs. The complete Cedarapids line includes all-automatic, 100% portable batch type models in sizes up to 7500-lbs; automatic, semi-automatic and manual mix-up models for either stationary or portable installation, in sizes ranging from 1500-lb. to 7500-lb. batches; also available are two sizes of continuous mix plants.

#### Portable Aggregate Plants

Low-cost aggregate cuts cost per ton on your entire paving project. With the complete line of Cedarapids Portable Aggregate Plants, you can produce aggregate in any quantity to practically every specification. The Cedarapids line includes a profitable variety of different units, ranging from portable primary crushers, intermediate crushing and screening plants, secondary crushing and screening plants, tandem crusher aggregate plants, conveyors, bins, and other production supporting auxiliary equipment.



**IOWA**  
**MANUFACTURING CO.**  
Cedar Rapids, Iowa

IOWA MANUFACTURING COMPANY, Cedar Rapids, Iowa  
Gentlemen: Please send full information about the Cedarapids Bituminous Paver.

Also send details about the equipment checked below . . .

- ☐ Bituminous Mixing Plants ☐ Portable Aggregate Plants  
☐ Ask your representative to call

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_



The 70-pound Atlas Copco E-40 breaker is designed for all types of demolition work. It can also be converted for use as a sheeting driver.

### Two new paving breakers for tough demolition jobs

Two low-vibration paving breakers said to deliver maximum power on minimum air input are announced by Atlas Copco.

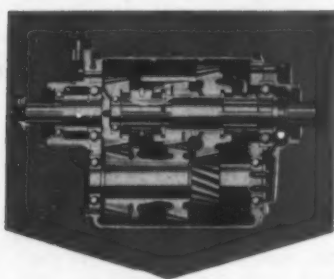
The breakers may be used on all types of demolition work, including concrete, asphalt, and brick walls. They may also be used as trench diggers, and the larger of the two machines can be converted for use as a sheeting driver. Because of special construction features, the breakers find use in all types of underwater construction, demolition, and salvage operations.

Available tools—with standard hexagon shanks either 1 1/8 or 1 1/4 x 6 inches—include moll points, both narrow and wide chisels, digging blades, frost wedges, and clay spades.

The E-20 model weighs 47 pounds. Piston diameter is 1 1/8 inches, and piston stroke is 3 15/16 inches. Overall length, including the foot-operated latch-type retainer, is 24 1/2 inches.

The E-40, weighing 70 pounds, has a 2 1/2-inch piston diameter and 5 1/4-inch stroke. Overall length of the E-40 is 27 1/2 inches.

For further information write to Atlas Copco, Dept. C&E, 545 Fifth Ave., New York 17, N. Y., or use the Request Card that is bound in at page 18. Circle No. 69.



## Specify FULLER Specify the MODEL

For heavy duty trucks and tractors specify the FULLER '92 SERIES 3-SPEED AUXILIARY

- High capacity
- Widest range of ratios
- Top-mounted power take-off optional
- Low initial cost, reduced maintenance
- Available from all truck manufacturers on specification

92 SERIES (Heavy-Duty) RATIOS				
MODEL	SPUTTER RATIOS		DEEP REDUCTIONS	
	High	Inter-mediate	Low	
3-A-92	.74	1.00	2.09	
3-B-92	.84	1.00	1.24	
3-C-92	.75	1.00	2.64	
3-D-92	.75	1.00	1.24	
3-E-92	.84	1.00	2.09	
3-F-92	.84	1.00	2.64	
3-G-92	1.00	1.327	2.09	
3-H-92	1.00	1.327	2.64	



FULLER MANUFACTURING COMPANY  
(Transmission Division)  
KALAMAZOO, MICHIGAN  
Subsidiary EATON Manufacturing Company  
For more facts, circle No. 326

### New motor-generator series provides 60-cycle power

A new series of combination electric motors and 60-cycle ac generators has been developed by the Kato Engineering Co.

These motor-generator sets are designed to be used in pairs, and to provide a continuous source of 60-cycle ac current. Output is 10 kva, and speed is 1,780 rpm.

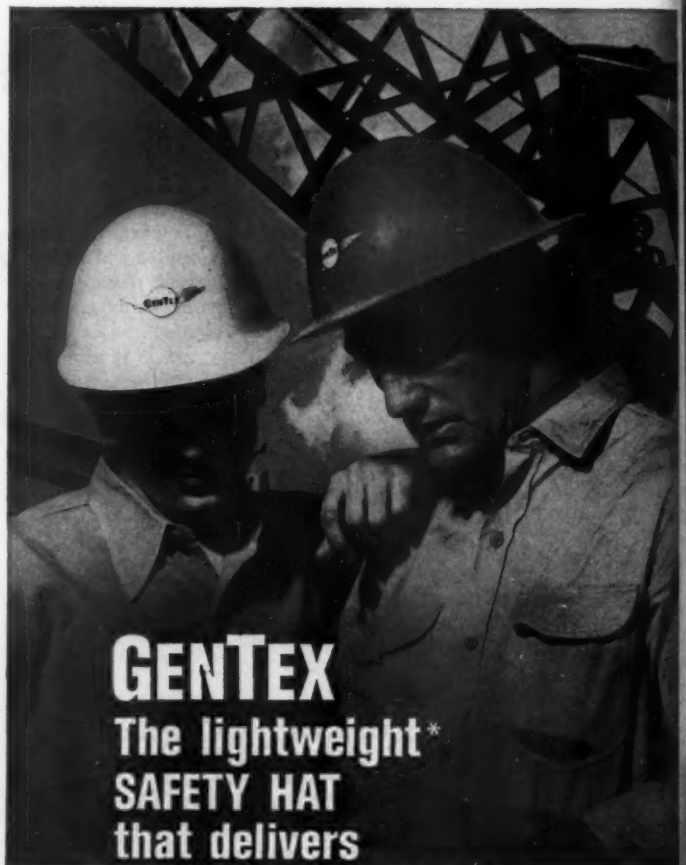
In case of power-line failure, the generator is driven by a gasoline or diesel engine that is automatically brought up to proper speed so that the frequency dip will not exceed approximately 5 or 6 cycles. To minimize dip in frequency and voltage when normal power fails, the motor

generator is carried by the momentum of a massive flywheel, and either a gasoline or diesel engine may be used as prime mover.

The generators are powered with either single-phase or 3-phase induction low-slip motors. Regulation by a magnetic amplifier on the collector ring or the generating end.

The units measure 3 feet 11 inches long, 17 inches wide, 18 inches high and weigh 698 pounds net.

For further information write to the Kato Engineering Co., Dept. C&E, 1415 First Ave., Mankato, Minn., or use the Request Card at page 18. Circle No. 2.



## GENTEX The lightweight SAFETY HAT that delivers

**IMPACT RESISTANCE**  
better than 40 foot-pounds

**AND PENETRATION RESISTANCE**  
less than 1/4" penetration in 10 ft.-pound plumb bob test  
(Federal specs allow 3/8")

**PLUS DIELECTRIC RESISTANCE**  
up to 10,000 volts

**AND ALL DAY COMFORT**

Exclusive no-wrinkle headband conforms to head contour, eliminates pressure on temples. 6-point suspension system, designed on same principle as jet pilot helmets, keeps hat in positive balance always—no more end-of-shift strain and fatigue. POLY-ETHYLENE shell won't crack at brim or crown when dropped—even on concrete. Smooth, modern design with choice of 9 colors impregnated right in the plastic for handsome appearance and instant job classification. Snap-in nylon and plastic headband with fingertip control, fully washable. Adjustable, self-storing chinstrap and winter liners available. Brim and peaked-cap models. \*12 1/2 oz. to 12 3/4 oz., depending on impregnated color pigment. We would be pleased to submit full details and a hat for testing—just drop us a note on your company letterhead.

Foremost manufacturer of helmets for military, industrial, civic and sports use.  
**GENTEX CORPORATION, 450 7th AVE., NEW YORK 1**

For more facts, use Request Card at page 18 and circle No. 328

### ROTARY SWEEPER BROOMS

WE MANUFACTURE ALL SIZES NAME YOURS

- Austin-Waters
- Cab Lowrey
- Del-Harvester
- Fardoon
- Ferguson
- Grass
- Gutternips
- Hough
- Huber
- Jaeger
- Littleford
- Little Giant
- Moll (M.B.)
- Blomberg
- Ram
- Rosco
- Spearwell
- Tampo
- and many others

69<sup>50</sup> up

Brooms filled with fibers of Palm-Hickory-Bass-Spring Steel Wires or DuPonts Nylon.

SAVE MONEY—if you fill your own order core only without filler.

REBUILDING any make size or type. New slats-hubs-shaft-cable.

WE SHIP WORLDWIDE-IMMEDIATELY

Road Builders—it's sensational!

ROAD DRAG LEVELERS BROOMS

BIG PECKERWOOD BIG

For even distribution of materials six inches wide—lengths to 12 feet. No frame required.



ONLY \$3.50 FOOT IN STOCK LENGTHS 4', 6', 8', 10' or 12'

COCOA ROLLER MATS—STREET

KENNEDY'S PUSH BROOMS

VAN BRUSH MFG. CO.

2738 McGuffey Trlwy., Kansas City, Mo.

For more facts, circle No. 327





A heavy riser is removed from a manganese steel casting by a workman with an Oxweld C-66 natural-gas cutting torch.

### Natural-gas hand torch cuts 30-inch-thick metal

A natural-gas cutting torch that can slice through 30-inch-thick metal in a single pass has been introduced by the Linde Co.

Designated Oxweld C-66, the unit features interchangeable injectors that make it possible to use either low or medium-pressure natural gas. The spring-loaded injector assembly provides uniform and thorough mixing of gases and eliminates flashback, states the manufacturer.

More than 40 different nozzles are available for use with the Oxweld C-66, including nozzles for scarfing, gouging, and rivet piercing. Bendable long-length nozzles that can be used for riser cutting and on jobs in hard-to-reach places are also available.

The torch weighs 3 pounds 14 ounces. Standard models are 27½ inches long with a 75-degree head angle. Longer and shorter models for special operations can be supplied with head angles of 45, 75, 90, and 180 degrees.

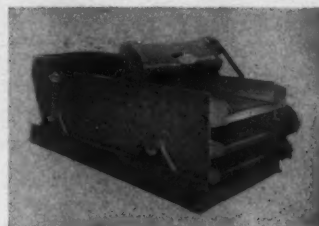
For further information write to the Linde Co., division of Union Carbide Corp., Dept. C&E, 270 Park Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 23.

### New vibrating screens offered in three sizes

The Universal Screenmaster horizontal vibrating screen is now available in three new sizes—5×12, 5×14, and 5×16 feet.

Featuring a rubber bushed phasing bar and air springs that eliminate leaf and coil springs, the screens are available with 2, 2½, and 3 decks.

For further information write to the Universal Engineering Corp., Dept. C&E, 625 C Ave. N.W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 79.



The new Screenmaster horizontal vibrating screens feature a new system for controlling basket action and cushioning vibration.



## The guard rail held because it's steel

Steel guard rail is made and tested for a wide margin of safety. When this heavyweight plowed into the Bethlehem guard rail along the Southeast Expressway near Boston, the rail held and prevented the truck from rolling down a bank onto a highway below. Thanks to the strength of steel, this accident was not as tragic as it might have been.

### Galvanized Rail Cuts Maintenance

Today Bethlehem steel guard rail comes galvanized. The protective coating holds maintenance to a minimum, and gives many years of service.

### High Strength for Maximum Protection

Bethlehem beam guard rail has the ideal combination of high strength and low maintenance. That's why Bethlehem steel guard rail protects literally thousands of miles of the nation's roads. Send for our free booklet that describes beam guard rails in detail. Just write to the nearest Bethlehem sales office, or direct to us at Bethlehem, Pa. Ask for Booklet 514.



for Strength  
... Economy  
... Eye-Appeal

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.  
Export Distributor: Bethlehem Steel Export Corporation

# BETHLEHEM STEEL



For more facts, use Request Card at page 18 and circle No. 330

## CONCRETE TESTERS

THE WORLD'S FINEST  
LOW COST PLANT AND  
JOB-SITE TESTERS

For  
**CYLINDERS**  
**CUBES**  
**BLOCKS**  
**BEAMS**  
**PIPE**

IF IT'S A CONCRETE TESTER  
YOU NEED-GET IN TOUCH WITH

**FORNEY'S, Inc.**  
TESTER DIVISION  
P.O. BOX 310 - NEW CASTLE, PA.

For more facts, circle No. 329

JULY, 1960



Mounted on a Cat D7, the Ateco HR-D7 ripper retains such features as swivel-mounted shanks to permit easy steering even while ripping full depth.

### Extra-heavy-duty ripper rips to 42-inch depth

Designed to match the performance features of the Caterpillar D7, an extra-heavy-duty model of the Ateco rock ripper is offered by the American Tractor Equipment Corp.

Features of the Ateco HR-D7 ripper include larger hydraulic cylinders and rods, heavier tool beam and swing brackets, 6 inches more tool-beam ground clearance, and straight-line draft.

Maximum ripping depth is 42 inches. Swing brackets will take

straight or curved shanks up to 6 inches, and specials such as cable layer and subsoiler shanks. A complete line of replacement boots and points is available, including the wing-foot attachment for greater lifting and fracturing action.

For further information write to the American Tractor Equipment Corp., Dept. C&E, 9131 San Leandro Blvd., Oakland, Calif., or use the Request Card that is bound in at page 18. Circle No. 22.



Completely portable Lima A-W crushing installation has primary 20 by 36-in. jaw crusher, Model 101-CE secondary plant and 7-yd. surge bin.

Delivers exceptionally high production for Maymead Lime Co. in Tennessee.

## How Lima Austin-Westerns BEAT RISING COSTS!

Higher output, lower maintenance. These two cost reducers are characteristic of Lima Austin-Western Crushing, Screening and Washing equipment.

Advanced engineering design assures top operating efficiency for years—free of maintenance problems and costly downtime. Improved manufacturing processes and extensive use of anti-friction bearings and heat-treated alloy steels also add to the dependability of this rugged, precision-built machinery.

Lima A-W offers a complete crushing, screening and washing line including jaw and roll crushers, matching screens, conveyors and bins. Stop increasing costs; learn how Lima Austin-Western meets your exact needs for low-cost, accurately sized specification materials. See your nearby distributor or write to Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.



Lima Austin-Westerns available for stationary or portable installation.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

**LIMA AUSTIN-WESTERN** Crushing, Screening and Washing Equipment  
**BALDWIN · LIMA · HAMILTON**  
CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO

For more facts, use Request Card at page 18 and circle No. 331



LESCHEN WIRE ROPE DIVISION  
H. K. PORTER COMPANY, INC.

For more facts, circle No. 332

CONTRACTORS AND ENGINEERS



### Tilt trailer available for smaller equipment

Talbert Trailers, Inc., announces a general-purpose tilt trailer for smaller contracting equipment.

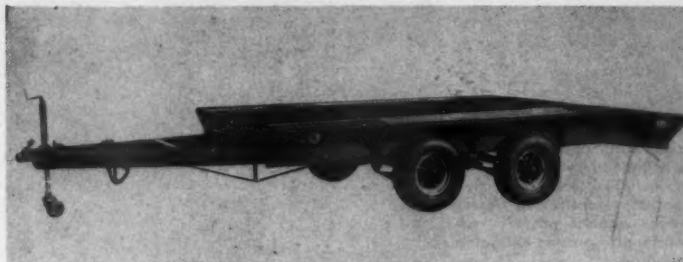
Designated Model TT-6, the unit offers a 6-ton load capacity.

Load dimensions of the over-the-wheels deck are 15 feet long and 8 feet wide. Loaded deck height of the unit is 30 3/4 inches.

Offered as standard equipment are: Fayette 4-spring suspension; Fayette

tubular axles; Warner electric brakes; Goodyear cast spoke wheels; Goodyear demountable rims; four 8x14.5, 12-ply tubeless tires; 2-inch longitudinal fir flooring; and ICC lights, directional signals, and reflectors.

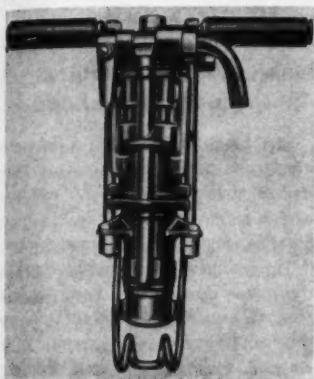
For further information write to Talbert Trailers, Inc., Dept. C&E, 7950 W. 47th St., Lyons, Ill., or use the Request Card that is bound in at page 18. Circle No. 77.



A general-purpose tilt trailer for smaller contracting equipment, the Talbert Model TT-6 features a load capacity of 6 tons.

### Light-duty rock drill available in three types

The Davey Compressor Co. announces a new Davey-Holman light-duty rock drill in the 45-pound class.



Designated Model S-30, it is said to combine top drilling performance with exceptionally low maintenance cost. Because of its high-output working capacity, the S-30 can be employed for drilling both primary and secondary blast holes. It can be used with an air leg, if desired.

The drill has a 3-way throttle control—on, off, and blow, and is available in three types—blower, blast, and wet. Also, alternate rotation speeds are available.

The lubrication system, reportedly assures automatic oiling of every working part.

For further information write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 3.

### Concrete vibrator operates on 50 volts

The Model HIV-1 internal concrete vibrator is available from the Wacker Corp.

The unit works on 50 volts for safe handling by operators on wet ground. This 180-cycle motor-in-head vibrator operates at 10,000 rpm under load, according to the manufacturer. It is designed to handle 2 and 2 1/4-inch vibrating heads.

Two single-phase, dc, 115-volt 1,000-watt outlets are provided to power auxiliary equipment such as lights, drills, and saws.

For further information write to the Wacker Corp., Dept. C&E, Hartford, Wis., or use the Request Card at page 18. Circle No. 24.

For more facts, use Request Card at page 18 and circle No. 333

## There's an Insley working near you

● For rugged jobs in rugged country, count on the rugged Insley WB. Insley machines are designed to get the job done—in swamplands or in

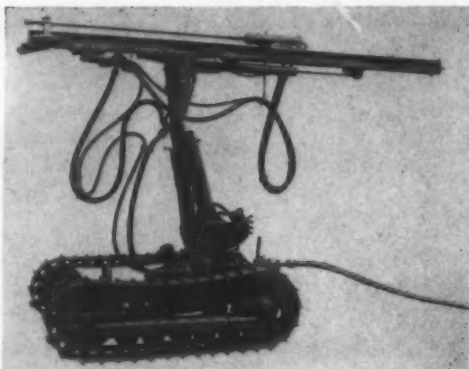
for top performance, efficiency and long life.

See your Insley distributor today. Get the facts on the complete Insley line—5 to 45 ton crane capacity, 1/2 to 1 1/2 cu. yd. bucket capacity, crawler,



INSLEY MANUFACTURING CORPORATION  
Western Regional Office—Alhambra, California  
General Office—Indianapolis 6, Indiana

Dual controls, 11-foot-high boom lift, and 360-degree carriage dump are features of the all-new Tracdril. Five specially constructed lower track wheels provide exceptional ground-hugging stability.



#### Crawler-mounted drill covers 17-foot diameter

The Chicago Pneumatic Tool Co. announces the Tracdril Model G-900, a mechanized drilling rig capable of drilling over either track at right angles. According to the manufacturer, the unit can cover a 17-foot-diameter, 180-degree arc.

Also capable of drilling horizontal snakeholes 25 inches from the ground, the Tracdril's boom can be raised to a height of 11 feet for horizontal breast holes. Carriage dump adjusts through a full 360 degrees, increasing top-hole reach. An 85-degree carriage swing allows vertical holes to

be drilled, regardless of slope.

A 12-hp tramping team, powerful enough to tow a 600-cfm compressor up a 20 per cent grade or to maneuver rugged, rutted terrain, provides the driving force for the G-900.

All drilling maneuvers—swing, lift, dump, and tilt—are hydraulically controlled. Dual controls—one set on the forward end of the drill boom, the other at the tramping position—provide the operator with control of every rig maneuver from front or rear.

For further information write to the Chicago Pneumatic Tool Co., Dept. C&E, 6 E. 44th St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 92.



Here, PSR-9 compacts gravel road in Jefferson County, Wisconsin. Kneading action of pneumatic tires, plus oscillating action on all 9 wheels, helps the PSR-9 key and lock loose materials in place. Helps eliminate hairline cracks when rolling asphalt, too.

## LOWER YOUR OPERATING COSTS with the VERSATILE PSR-9

Handles both big and odd-lot jobs profitably . . . meets specs fast on breakdown, intermediate, or finish rolling.

You're looking at the world's most modern pneumatic roller—introduced last year and designed from the ground up to answer your needs for more efficient rolling. The PSR-9 gives you 3 to 10 tons of compaction weight on 9 wheels. All wheels oscillate for contour compaction. There's one-half inch overlap between front and rear tires . . . over-all rolling width, 5'8" per pass.

Sliding gear transmission with torque converter gives operator

smooth, infinite speed selection over 3 speed ranges, at up to 15 mph in both directions. Direction of travel and speed are both controlled by single combination lever for easier and more accurate shuttle rolling and control.

Other operator controls include power steering, and power brakes. Low center of gravity, mechanical parking brake, and short 18'10" outside turn radius are other features your operators will like. Why not get the most quality your dollar will buy in your next pneumatic tire roller? See the PSR-9, or bigger 10 to 30-ton companion model PSR-30 . . . today.



New forward-reverse throttle (arrow) gives operator instant one-lever control of direction and speed. Push forward for forward travel, pull back for reverse . . . that's all there's to it!



"Big brother" to the PSR-9, 7-wheel PSR-30 offers 10-30 ton compaction weight . . . speeds to 19.4 mph forward and reverse. Note how dual controls, plus special frame contour, give operator clear view of both guide and drive wheels on either side.

Tell me more about the  
☐ PSR-9 ☐ PSR-30

NAME \_\_\_\_\_  
COMPANY \_\_\_\_\_ TITLE \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY, STATE \_\_\_\_\_

82-CA\*

**BUFFALO-SPRINGFIELD COMPANY**

SPRINGFIELD, OHIO  
A Division of Kuehling Co.

BUFFALO-SPRINGFIELD COMPACTION EQUIPMENT • FLAHERTY SPREADERS AND SWEEPERS • STARDRILL-KEYSTONE DRILLING MACHINES

For more facts, use coupon or Request Card at page 18 and circle No. 94

#### New vibrator features 1 1/4-inch-diameter head

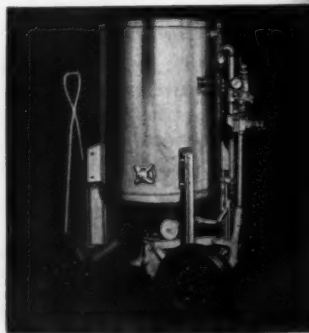
The Maginniss Hi-lectric concrete vibrator is now available with a 1 1/4-inch-diameter head for use on precast-concrete columns, beams, and pipe, as well as for prestressed work.

The manufacturer emphasizes that the motor used in this new vibrator has no brushes or commutators to wear and require maintenance. It is claimed that this 120-volt 3-phase 180-cycle induction motor will not slow down and lose vibrating power in low-slump concrete.

The vibration frequency is variable between 5,000 and 10,500 vpm.

Other features of this Maginniss vibrator include a built-in cooling fan, replaceable air filter, and a duplex-type handle for easy operation in vertical or horizontal position.

The reinforced flexible shafts are available in 5, 10, 15, and 20-foot



#### RUEMELIN SAND BLASTS

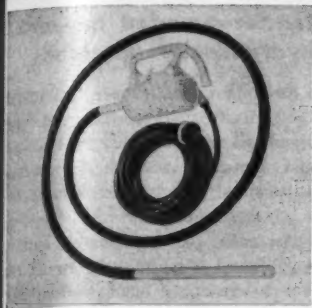
. . . provide fastest cleaning action. Remove rust, paint, scale from highway equipment, ready-mix drums, rail or highway bridges, water towers. Available in several sizes, in stationary or portable mountings. Hi-speed trailer mounts permit easy handling. Units available with wet nozzles and remote controls at nozzle for instant stop and start control.

Write for descriptive bulletin.  
**RUEMELIN MFG. CO.**  
3887 No. Palmer St., Milwaukee 12, Wis.

For more facts, circle No. 335

CONTRACTORS AND ENGINEERS





lengths. According to the manufacturer, three 10-foot lengths of shaft may be coupled together without loss of vibrating performance.

For further information write to the Maginniss Power Tool Co., Dept. C&E, 154 Distl Ave., Mansfield, Ohio, or use the Request Card at page 18. Circle No. 57.

### Plaster and mortar mixer has a 6-foot capacity

The Muller Machinery Co., Inc., announces a new utility-type plaster and mortar mixer with 6-cubic-foot capacity.

The manufacturer states that the new mixer operates effectively in conjunction with the various types of plaster pumping and spraying machines. It is built along the lines of previous Muller mixers and incorporates a safety grid and bag splitter that comply with the newest rigid safety regulations. The engine housing is split and hinged for accessibility and ventilation, and the hinge is protected by a rubber jacket.

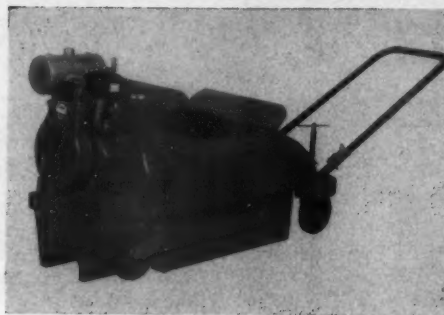
For further information write to the Muller Machinery Co., Inc., Dept. C&E, P. O. Box 248, Metuchen, N. J., or use the Request Card that is bound in at page 18 of this issue. Circle No. 105.

### Curber lays 12 fpm by extrusion method

A heavy-duty line of Stephens-Canfield curbing machines designed to lay concrete or asphalt curbs by the extrusion method has been introduced by Power Curbers, Inc.

The new unit features heavier components in the power train, which permit the laying of wider, high-compaction curb at speeds up to 12 fpm. There is a removable hopper for easier maintenance, as well as a new auger or compaction screw that gives greater life and reduces wear and tear on the machine.

Because this machine extrudes either asphalt or concrete curb in its



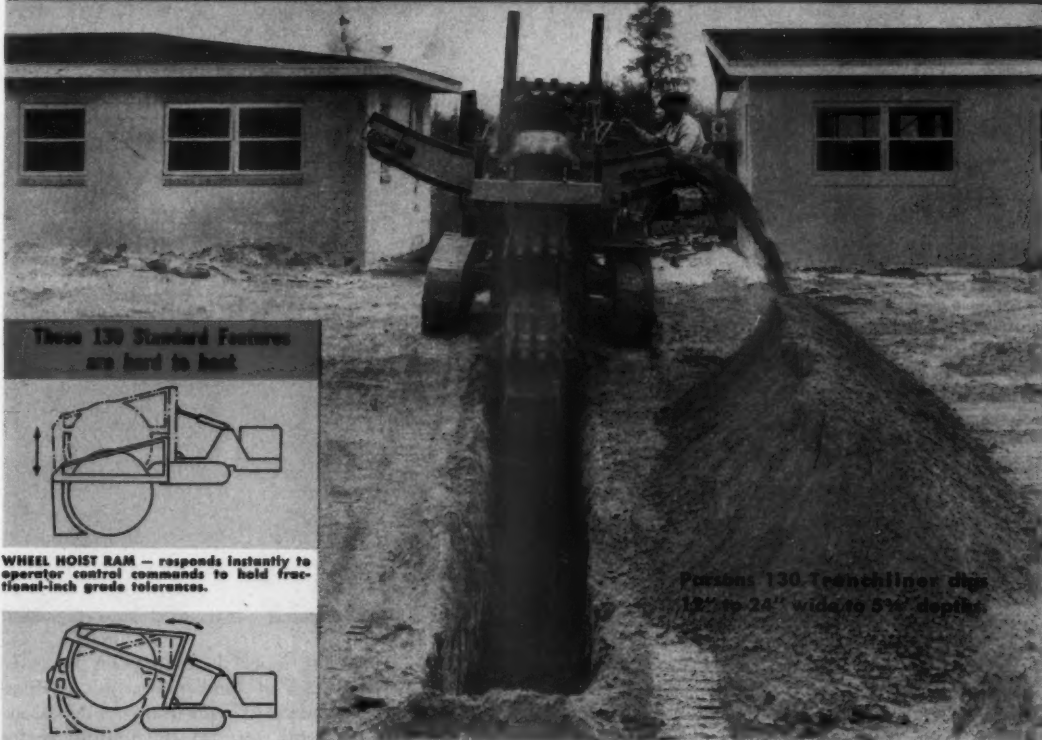
Heavier components in the power train permit the new Stephens-Canfield machine to lay asphalt or concrete curb at up to 12 fpm.

final shape, there are no forms to be placed or stripped.

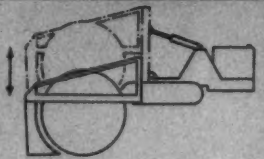
For further information write to

Power Curbers, Inc., Dept. C&E, P. O. Box 1465, Salisbury, N. C., or use the card at page 18. Circle No. 104.

## WHY PARSONS® 130 TRENCHLINER® MAKES CLOSE-GRADE TRENCHING QUICK, EASY



These 130 Standard Features are hard to beat



WHEEL HOIST RAM — responds instantly to operator control commands to hold fractional-inch grade tolerances.



MAST-TILT RAM — moves mast forward for travel, reduces height, shifts weight for better balance.



GUARANTEED HEADSHAFT — withstands severe shock loads, delivers maximum power to digging wheel. Guaranteed for a lifetime of service.



TRACTOR-TYPE CRAWLERS — independent steering, and drive for each crawler . . . better control. Easy to maintain.

Parsons 130 Trenchliner digs 12" to 24" wide to 5 1/2' depth

Trenching to toughest grade specs is easy digging for the Parsons 130 Trenchliner. A vertical-hydraulic ram moves digging wheel where needed — makes fractional-inch adjustments instantly to hold closest grade tolerances down to 5 3/4' depths. Independent crawler steering and drive enables 130 to dig more accurate curves, hold trench in line under all conditions. Digging capacity? You can get 12 inches to 18 lineal feet of trench per minute, or more depending on ground, dig from 12" to 24" wide. See your Parsons distributor for complete details soon.

## DUDGEON HYDRAULIC JACKS

### SALES RENTALS

CAPACITY TO 400 TONS

FOR: PILE TESTING UNDER-PINNING BRIDGES PIPE PUSHING



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DESIGNERS and MANUFACTURERS OF Hydraulic Units For Special Applications

**RICHARD DUDGEON INC.** EST. 1850

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**PARSONS COMPANY**  
Newton, Iowa

A Division of  
**KOEHRING**  
Company

For more facts, use Request Card at page 18 and circle No. 337

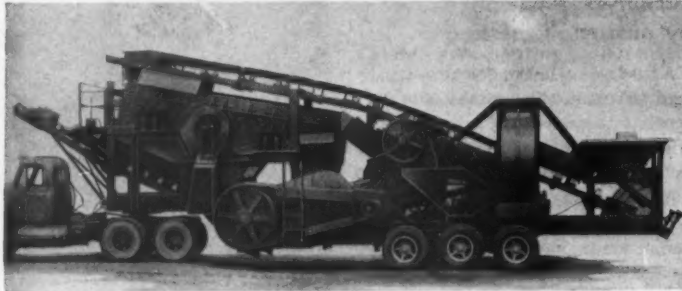
### Crushing, screening plant handles 14-inch boulders

An exceptionally large portable, duplex crushing and screening plant, called the Productioneer, is announced by Pioneer Engineering.

Using a big 1536 jaw crusher with a 40-inch-diameter x 30-inch-wide roll crusher, the unit handles boulders up to 14 inches and turns out up to three sizes of material.

It also features a new-design, high-speed, 5x14-foot, 3-deck vibrating screen that has 70 square feet of specification deck.

For increased travel ease, the rear assembly—including the 90x28-inch bucket wheel and hopper—may be



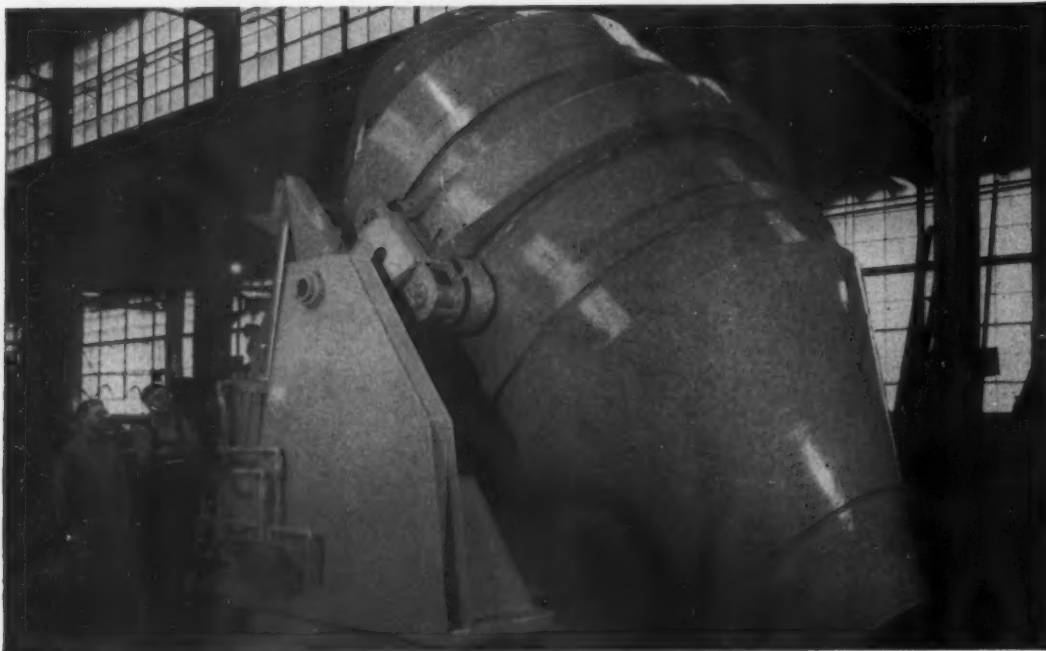
For increased travel ease, the rear assembly—including the 90 x 28-inch bucket wheel and hopper—may be quickly detached without the use of a crane.

quickly detached without the use of a crane.

For further information write to Pioneer Engineering, Division of Poor

& Co., Inc., Dept. C&E, 3200 Como Ave., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 86.

## World's largest tilting mixer uses TIMKEN® bearings to triple life



With its 10-cu-yd capacity and weighing 56,000 lbs., this T. L. Smith tilting mixer is the world's largest. By using Timken® tapered roller bearings in the transmission, main rollers and edge rollers, T. L. Smith engineers increased this giant's life to three times that of older, smaller capacity units.

Construction equipment builders have relied upon

Timken bearings for more than 40 years because: 1) The tapered design of Timken bearings enables them to take radial and thrust loads in any combination. They take shock loads, too. 2) By holding shafts concentric with housings, Timken bearings make closures more effective—keeping lubricant in, dirt out, maintenance down.



**EXTRA ENGINEERING SERVICE** that saves you time and money. Our graduate engineer salesmen can often solve your bearing problems on the spot.



**STATISTICAL QUALITY CONTROL** catches "mistakes" before they happen. Charts on our production machines guard against any off-size bearing parts.



Industry rolls on  
**TIMKEN®**  
tapered roller bearings

The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO". Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits.

For more facts, use Request Card at page 18 and circle No. 330

### Tractor-mounted mower hydraulically operated

The hydraulically operated McGraw-Hill highway mower, designed for mounting on most industrial tractors and featuring positive, adjustable knife speed, has been introduced by A. C. Anderson, Inc.

According to the manufacturer, knife speed is maintained even during change of the height or angle of the cutter bar. By moving a single control, the operator can change cutter-bar height from ground level to 15 inches or more, and the cutter bar remains horizontal while being raised, assuring uniform mowing. Any tendency of the end of the cutter bar to overtravel reportedly has been eliminated by the Anderson parallel linkage.

A second control enables the operator to change the cutter bar height to mowing at any angle from 90 degrees above to a full 45 degrees below tractor level.

If the cutter bar strikes a rigid obstruction, the heavy-duty breakaway latch permits it to swing back and clear automatically. An adjustable stop limits rearward swing to a desired angle from 45 to 90 degrees. The cutter bar is re-engaged by lowering the outer shoe when the tractor backs up to cut the portion skipped.

In the event that a sapling becomes fouled in the knife, the operator can free the jam-up simply by reversing the hydraulic motor.

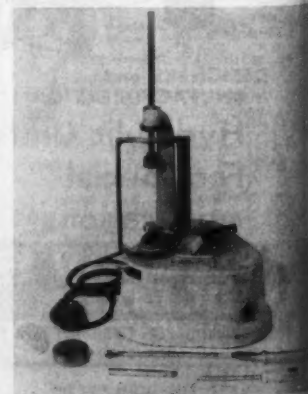
For further information write to A. C. Anderson, Inc., Dept. 108, Dept. C&E, P. O. Box 391, Wildwood, N. J., or use the Request Card at page 18. Circle No. 53.

### Device makes light work of trimming soil samples

The tedious job of trimming soil samples into cylindrical form for testing purposes is said to be greatly simplified and speeded up to a matter of minutes by the new Soiltest Model P-400 motorized soil lathe.

Soils ranging from soft clays to friable pumices need only be trimmed roughly to size before they are mounted on 1.4-inch or 2.8-inch diameter grips (other sizes are available) for placement on the lathe's turning head.

For further information write to Soiltest, Inc., Dept. C&E, 4711 North Ave., Chicago 39, Ill., or use the card at page 18. Circle No. 44.



CONTRACTORS AND ENGINEERS



## Pumps solve dewatering problem in stone quarry

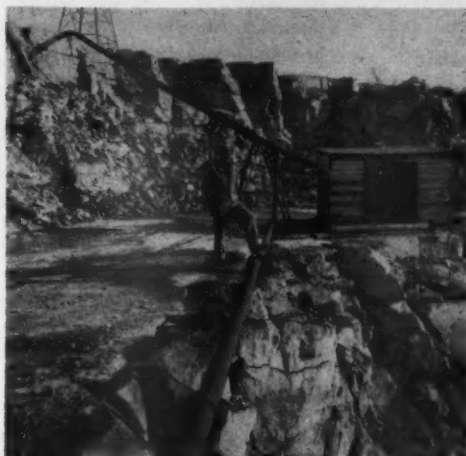
When rising springs and surface water threatened to halt the operation of the Hamilton & Sons stone quarry near Marion, Ohio, the firm solved the problem with two Barnes self-priming centrifugal pumps.

The units were an electrically driven 40M SPC pump of 40,000-gpm maximum capacity and a 90M SPC of 90,000-gpm maximum capacity. Both pumps were installed on a shelf of the quarry about 20 feet above floor level. In addition to the 20-foot suction lift, another rise of about 30 feet was required to push the water

over the wall to the drainage ditch.

A 10-hp electric motor drives the 40M pump, which runs continuously the year round to remove water from a running spring. When heavy surface water, plus increased flow from the spring, exceeds the capacity of the smaller pump, the diesel-driven 90M goes into action to keep water down.

For further information write to the Barnes Mfg. Co., Dept. C&E, 651 N. Main St., Mansfield, Ohio, or use the Request Card at page 18. Circle No. 103.



Despite the long pipe runs and high lift required to draw water from the quarry floor and push it over the rim of the pit, the two Barnes SPC pumps have kept the Hamilton quarry dry and workable since they were installed more than three years ago.

## ECONMOBILE 620

- 4000 lb. capacity
- Up to 30 ft. 6 in.
- 33 ft. with Crane Hook
- Reach 19 1/2 ft.
- Clearance just 109"
- 30 MPH top speed
- 73 HP Engine
- Power Steering
- Torque Converter

More ECONMOBILES have been sold than any comparable vehicle



**AMERICAN ROAD EQUIPMENT CO.**  
4201 North 26th Street Omaha, Nebraska

For more facts, use Request Card at page 18 and circle No. 339

## 4 to 6-ton tandem roller turns in 14 1/2-foot radius

The General Engines Co., Inc., announces a new 4 to 6-ton tandem roller called the General.

Featured are its ability to work



Besides offering extra width of compaction and a low center of gravity, the General Engines roller is said to be exceptionally easy to operate.

within 3/4 inch of building and foundation lines; extra-high clearance of curbs; and a turning radius of only 14 1/2 feet.

Fingertip-control power steering, maximum visibility, hydraulic brakes, and simple forward and reverse transmission are other important features.

For further information write to the General Engines Co., Inc., Dept. C&E, 307 Hunter St., Route 130, Thorofare, N. J., or use the Request Card at page 18. Circle No. 55.

## New troweling machine powered by 3-hp engine

The Champion Mfg. Co., offers a concrete troweling machine in a 29-inch fixed guard-ring size powered by a 3-hp Briggs & Stratton engine.

Called Model 290-G, the unit also features a positive-action clutch; a dead-man grip that stops trowel rotation when released; and long-lasting bronze gears.

It comes equipped with three combination float-finish trowel blades and is adaptable for use with grind-stones.

Steel bars can be added for extra weight when desired.

For further information write to the Champion Mfg. Co., Dept. C&E, 3700 Forest Park Ave., St. Louis 8, Mo., or use the Request Card at page 18. Circle No. 72.

## MORE QUALITY ENGINEERED FEATURES IN STEPHENS-ADAMSON CARRIERS



Series # 200 Carriers

Series #700 Carrier

### ADVANTAGES

- Spun-end roller assemblies and parts interchangeable for quick installation.
- One-Piece, all-steel, welded frame construction.
- Positive lubrication . . . pre-lubricated at factory . . . provisions for field lubrication.
- Roller brackets tilt two degrees in direction of travel for greater belt training effect.
- Die-cast labyrinth bearing seals keep grease in . . . dust and dirt out.



Pneumatic "Impact" Carriers



### WRITE FOR BULLETIN 355

STANDARD PRODUCTS DIVISION  
**STEPHENS-ADAMSON MFG. CO.**  
17 RIDGEWAY AVENUE • AURORA, ILLINOIS  
PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA  
CLARKSDALE, MISSISSIPPI • BELLEVILLE, ONTARIO

For more facts, use Request Card at page 18 and circle No. 341

## CONTRACTORS REDUCE LABOR COSTS with hydraulically mechanized MATERIALS HANDLING



the HIAB 170

### SPEED LOADER

Contractors such as Peter Kiewit Sons' Co., Guy F. Atkinson Co., and many others are reducing costs with the one man operated, fully hydraulic, Hiab Speed Loader. The Hiab provides hydraulically mechanized materials handling on a wide variety of utility jobs at LOW COST.

The HIAB 170 offers a range of lifting capacities from 6000 lbs. on the shortened boom of 5' to 2200 lbs. on a full boom of 13'. The boom length is easily adjustable through hydraulic control. Control is from either side of the truck cab.

Ideal for general maintenance work, the HIAB 170 will lift up to 20' above ground level at a maximum speed of 30" per second. Crane action is positive and accurate. 200° or 360° swing arc. When not in use the HIAB 170 folds snugly behind the cab, taking only 15" of space. This leaves the entire truck bed open for load.

Also available is the HIAB "Bimbo" Model 290 — a smaller version of the HIAB 170, with similar design features.

WRITE FOR NAME OF YOUR NEAREST DEALER

**Stanes**  
1666 Ninth Street 11901 So. Avenue "O" St.  
Santa Monica, California Chicago 17, Illinois

For more facts, use Request Card at page 18 and circle No. 340

## THREE JOHNSON ALL-WELDED BUCKETS

### TO MEET YOUR CLAMSHELL NEEDS



**WIDE REHANDLING**  
Live loads are stepped up to maximum because all dead weight is eliminated. Ideal for handling loose materials.

**GENERAL PURPOSE**  
Shown at left, this bucket has low center of gravity to concentrate full digging power on lips, teeth. Manganese cutting edges get tougher with use.

**HEAVY-DUTY DIGGING**  
Weight saved by welded construction in other parts is put back in sides, lips and bottom for deeper penetration and extra digging power.

**C. S. JOHNSON CO.**  
Champaign, Ill. • Stockton, Calif.

**KOEHRING**  
Company

Please send more data on \_\_\_\_\_ cu. yd. . .

- ☐ Rehandling Clamshells
- ☐ General Purpose Clamshells
- ☐ Heavy-Duty Clamshells

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_ JII C&E

For more facts, use coupon or circle No. 342

## Avoid legal pitfalls

### Pile driving responsible for damage to houses

**THE PROBLEM:** Landowners sued a contractor, who had constructed a bridge approach, for damages caused by vibrations produced in the driving of piles. Were judgments in favor of the landowners justified?

**THE ANSWER:** Yes. (*Dussell v. Kaufman Construction Co.*, 157 Atl. 2d 740, decided by the Pennsylvania Supreme Court.)

The decision seems to have been strongly influenced by the fact that the plaintiffs' homes were within 25 feet of the area in which the piles were driven. Especially noteworthy are these passages setting forth the opinion of the Supreme Court and written by Justice Musmanno:

"The . . . equipment used here was a steam hammer with a ram weight of 5,000 pounds and a drop of 3 feet 3 inches, producing a driving force of 16,000 pounds of energy on each blow, operating at an average of 60 blows per minute. . . .

" . . . The fact that the pile driver itself did not come into physical contact with the plaintiffs' houses does not exonerate [the contractor] from responsibility. . . . A pile driver whose operator ignores the presence of dwellings within the periphery of its vibrations is as responsible for the resulting damage as the bulldozer which leaves the road and knocks down adjoining buildings."

### Unemployment benefits

**THE PROBLEM:** Union employees of the general contractor on a New York State project refused to cross picket lines established as part of a general strike of ironworkers in the area, including ironworkers employed on the project by a subcontractor for steelwork. Were the general contractor's union employees—who had no other work available during the strike—eligible for unemployment insurance benefits?

**THE ANSWER:** Yes. (*In re Freeman*, 195 N. Y. Supp. 2d 62, decided by the New York Supreme Court, Appellate Division, Third Department.)

The court said that an undisputed finding that the "employer had other work which claimants could have performed but none was offered to them" seemed to be the equivalent of a finding that no work was available to them.

### State violated contract

**THE PROBLEM:** Did a state highway engineer arbitrarily and unreasonably refuse to approve a proposed source of material to be used as fill under a state highway contract, because the state intended to acquire for lake-shore development the land from which the contractor had arranged to procure the fill material?

**THE ANSWER:** Yes. (*D. W. Winkelman Company, Inc., v. State of New York*, 184 N. Y. Supp. 2d 681, decided

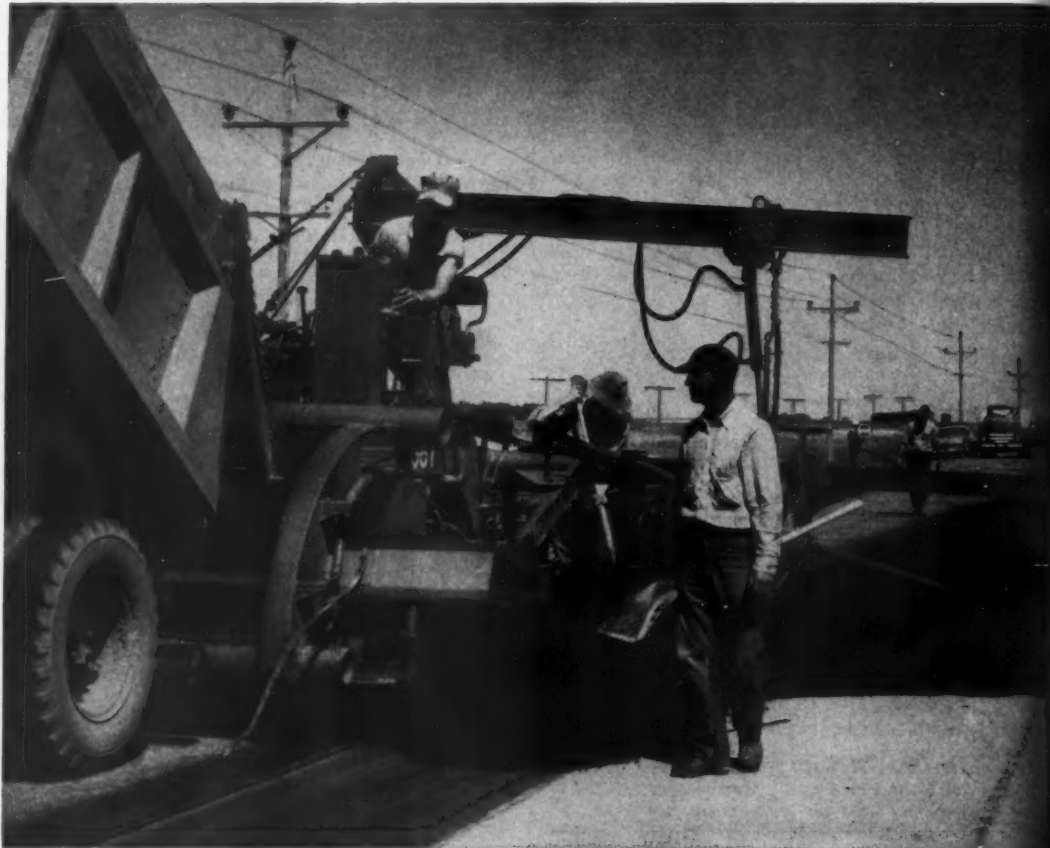
by the New York Court of Claims.)

Specifications with respect to the "location" of borrow pits from which the contractor was to obtain material for fill, under a contract for the construction and reconstruction of state highway in the area, used the quoted word as bearing on the quality and type of such material. Receipt of a brochure—consisting of a report to the superintendent of public works concerning a proposed picturesque park development—more than one

year before execution of the contract did not constitute notice to the contractor that the state intended to appropriate for such development land from which the contractor had made arrangements to obtain fill. The statute authorizing the superintendent of public works to acquire land for lake-shore development became a part of the contract thereafter executed, but it did not constitute notice to the contractor that the state intended to appropriate the land from which he had arranged to obtain fill.

Where the language of a contract, drawn by the state for construction and reconstruction of state highway,

is capable of more than one construction, all doubts must be resolved against the state and most beneficially to the contractor. Power of the state engineer to approve the source and quality of borrowed material for fill must be exercised reasonably and in accordance with fairness and good faith. Where a contractor is directed by a proper municipal representative to furnish materials or to do work that the contractor thinks is not called for by contract with the municipality, the contractor may under protest do as directed and thereafter collect. When the state engineer refused to approve the source of ma-



Five contractors each bought a Barber-Greene Road Widener and Shoulder Paver after seeing W. Hodgeman and Sons' machine perform on this 20-mile widening and resurfacing contract on U. S. 212 near Birds Island, Minn. General Supt., George McPherson states: "The Barber-Greene is the only rig that could have met state specs on both 9-ft. base widening and 6-ft. shoulder paving at speeds to 70 fpm. We laid the base course of emulsified asphalt using the hydraulically controlled strike-off attachment. On the last pass where pre-compaction and automatic leveling were required, we changed to our tamping-leveling attachment. On the 6-ft. wide and 2½" thick finish course we averaged better than 200 tons of hot mix hourly. This is the first time we've been able

to handle this type job with one machine."

See your Barber-Greene Distributor for details on the only machine with interchangeable attachments for handling all types of widening and shoulder paving with all materials, including concrete. And check how much more you can do with a machine featuring: NEW 2-UNIT DESIGN—greater stability with trailer-mounted attachments eliminates side drag steering problems; UNMATCHED PORTABILITY—10 mph under own power, or towed on its own trailer; and HYDRAULIC CONTROL—on strike-off attachment that is adjustable for paving . . . hydraulic steering, jib hoist, self-cleaning hopper, and brakes. Hopper conveyor hydraulically controlled for both speed and position.

# "ONLY WIDENER THAT COULD MEET STATE SPECS— PAVED SHOULDERS AT 70 FPM"

CONTRACTORS AND ENGINEERS



terial for fill, the contractor did not waive any rights against the state for breach of contract by proceeding with the work under protest in accordance with engineer's requirements.

### Oral agreements

**THE PROBLEM:** An architect sent a letter to an owner who contemplated building, stating the amount of his fees for services. The letter did not specify the size, type, or style of the structure, the cost of construction, or the quality of materials. The project was not carried out, and the architect sued to collect pay for preparing the

plans. Was the owner entitled to prove as a defense that it was orally agreed that the total cost of the building should not exceed a certain sum, and that the plans were never accepted because the cost of construction, according to the plans submitted, would have exceeded the specified total agreed upon?

**THE ANSWER:** Yes. (Levy v. Lease-way System, Inc., 154 Atl. 2d 314, decided by the Pennsylvania Superior Court.)

The court recognized that, ordinarily, the terms of a written contract cannot be contradicted by showing that there was an oral agreement

on different terms. But in this case there was no contradiction. The owner was properly permitted to prove vital facts, the conditions on which the architect would be entitled to the fees fixed by the written contract.

### Use tax applied to interstate shipment

**THE PROBLEM:** A contractor, engaged in the building and selling of houses, purchased unassembled prefabricated house units from an out-of-state manufacturer under a written sales contract that called for delivery of the units "F.O.B. building

site" in the state. Did title to the units pass to the contractor when a semitrailer used to convey the goods was unhooked from its pulling tractor, for unloading at the building site? And was the contractor subject to the payment of a use tax under the Kansas Compensating Tax Act, even though portions of the units, as a part of the unloading process, were directly fastened to the reality?

**THE ANSWER:** Yes. (Custom Built Homes Co., Inc., v. Kansas State Commission of Revenue and Taxation, 334 Pac. 2d 808, decided by the Kansas Supreme Court.)

The court decided that imposition of a use tax by the state on disassembled prefabricated houses shipped into the state was not violative of the interstate commerce clause of the federal constitution, merely because of such interstate transportation. When merchandise transported in interstate commerce has arrived at its destination and is held there for use or disposal, the title passes under the protection of state law and it becomes subject to the taxing and police power of the state.

### Edited by A. L. H. STREET Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

### Effect of agreement by sub to indemnify

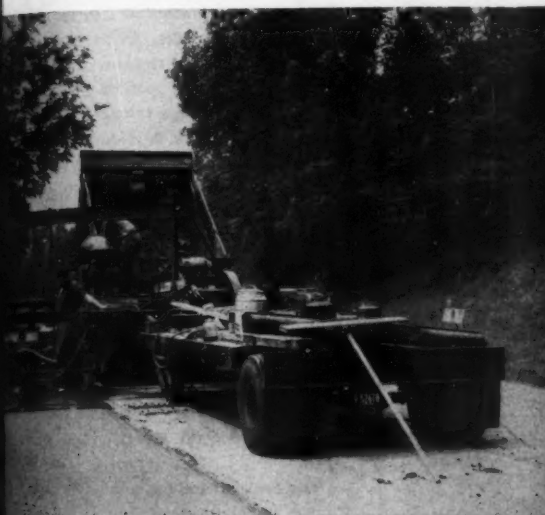
**THE PROBLEM:** A prime contractor for building construction sublet the steelwork under a contract binding the subcontractor to bear all claims for injury or property damage arising out of the subcontracted work. Was the subcontractor bound to indemnify the prime contractor against liability for injury to the subcontractor's employee due to the prime contractor's negligence?

**THE ANSWER:** No. (Batson-Cook Co. v. Industrial Steel Erectors, 257 Fed. 2d 410, decided by the United States Court of Appeals, Fifth Circuit. The court upheld a decision to the same effect by the United States District Court, Northern District of Alabama.)

The Court of Appeals said that the wording of the indemnity agreement did not imply what was not expressly stated: that the prime contractor should be indemnified against liability, whether or not the same resulted from its own negligence.

### Pedestrian fell into sewer trench

**THE PROBLEM:** A building job required sewer construction in an adjacent alley. After the excavation subcontractor had completed his work, the plaintiff, a pedestrian, fell into the excavation and was injured. He sued the owner, the general contractor, and the excavation subcontractor. The trial judge summarily



Versatile SJ-50 Road Widener and Shoulder Paver is shown improving traffic conditions on narrow road near Savanna, Ill., by making one-pass operation of laying 6-ft. concrete shoulder with exclusive vibrating concrete attachment.

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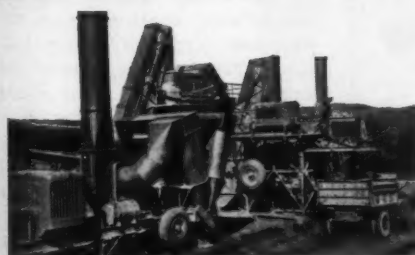
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JULY, 1960

## avoid legal pitfalls

*dismissed the suit against the owner and the subcontractor but awarded judgment against the general contractor. Did the judge err?*

**THE ANSWER:** Yes. The suit was properly dismissed as to the sewer contractor, but the owner and the general contractor were jointly liable. (Dixon v. Simpson, 332 Pac. 2d 656, decided by the Nevada Supreme Court.)

The court decided: Under a Nevada statute, the owner was jointly liable with the contractor for any negligence on the latter's part. The contractor was liable because he had control of the entire project, including trenching. The excavating sub-

contractor was not liable because he had fully performed his work and the general contractor had assumed control. A statute imposing liability on all who excavate applies only to those who are in control when an accident occurs.

### Crane lessor's liability

**THE PROBLEM:** Plaintiff, employee of a general contractor, sued defendant, the owner of a crane that had been leased with an operator and helper to the contractor, for injury sustained when a bucket fell from the crane and struck the scaffold on which plaintiff was working. Was plaintiff entitled to sue defendant for damages?

**THE ANSWER:** No. (Smith v. Poston

Equipment Rentals, Inc., 105 So. 2d 578, decided by the District Court of Appeal of Florida, Third District.)

The court decided that plaintiff's claim on account of the injury was limited to one under the Florida Workmen's Compensation Law. The court reasoned that the crane and the lessor's operating employee were being used as an integral part of the construction job; that plaintiff and the crane operator and his helper were statutory fellow servants, the general contractor being bound by law to secure payment of workmen's compensation to all three.

By so securing payment, the contractor secured immunity from suit, and the crane owner could not be regarded as a third-party wrongdoer against whom an independent suit

could be maintained. The crane and its operator were being used by the contractor to pour and place concrete. The defendant had not supplied the concrete, and the work of the crane operator and his helper were as much a part of the construction operation under the general contractor as if the mixed concrete were being transported by wheelbarrow.

### Binding effect of written contracts

**THE PROBLEM:** Plaintiffs furnished equipment and labor to defendants in clearing land for cemetery and subdivision improvements. On July 15, 1954, plaintiffs signed a release of defendants "from all claims concerning amounts due for rental of equipment, transportation of same, and all labor being used on the job." On the basis of this release, defendant issued a check to plaintiffs. Did the release cover all rentals, labor, materials, etc., furnished up to July 15, and bar plaintiffs from afterward claiming that the settlement was based upon an oral agreement that the payment and release did not cover performance during the first 15 days of July?

**THE ANSWER:** Yes. (Crow v. P. E. G. Construction Co., 318 Pac. 2d 47, decided by the California District Court of Appeal, Second District, Los Angeles.)

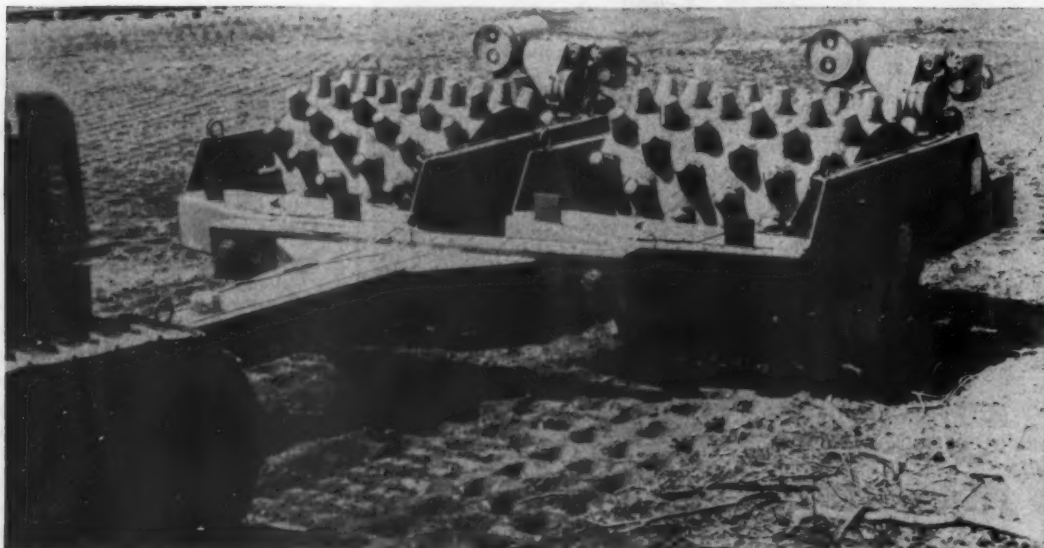
The decision follows a general rule of law judicially recognized throughout the country, to the effect that when a written contract is clearly and unambiguously worded, neither party can contradict it by showing a different oral agreement at the time the contract was signed. (This assumes that there was no mutual mistake in wording the contract and that neither party fraudulently induced the other to sign under misapprehension as to how the contract was worded.)

### Blasting damage liability

**THE PROBLEM:** Property owners sued a city, a prime sewer contractor, and a subcontractor for damage resulting from blasting operations by the subcontractor. Admittedly, there was no negligence by any of the defendants—the damage being purely accidental—and admittedly liability could be enforced by the plaintiffs against any of the defendants, regardless of negligence. But the prime contractor had contracted to indemnify the city against liability, and the subcontract specified that the subcontractor would indemnify the city and contractor "against all claims, demands, loss, liability and damages, . . . in the event of suit arising from accidents to persons or property occasioned by said subcontractor or his employees." Was judgment properly awarded against the subcontractor only?

**THE ANSWER:** Yes. (Gay v. S. N. Nielsen Co., prime contractor, Robert R. Anderson Co., subcontractor, 153 N. E. 2d 468, decided by the Illinois Appellate Court, Second District, Second Division.)

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# Product LITERATURE

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**Excavation support**—a chart, designed to furnish a quick estimate for supporting a deep excavation, from which the engineering data can be selected in 30 seconds. From the chart, the designer or estimator can select the size and spacing of all the structural components, including vertical soldier beams, timber sheet-piling, horizontal wales and their supporting rakers.

Write to Contact Sheet, Inc., division of Coakley & Booth, Dept. C&E, The Biltmore, 55 E. 43rd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 51.

**Hollow drill steels**—literature on Wooding's hollow drill steels and pneumatic hammer tools. Text illustrated with photographs and drawings. Price list included.

Write to Robert T. Wooding's, Inc., Dept. C&E, Mars, Pa., or use the Request Card at page 18. Circle No. 75.

**Watertight concrete**—a factual summary of information on the design and specification of watertight concrete, covering basic requirements. Discusses how Pozzolith reduces shrinkage, bleeding, and segregation to produce strong, durable structural concrete that is highly resistant to the penetration of water under normal conditions. Bulletin P-49b.

Write to The Master Builders Co., Dept. C&E, 7016 Euclid Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 107.

**Electrodes**—literature describing special electrodes used with the Arcair process. Lists the different types of electrodes available for use with Arcair torches, recommended current settings, and other helpful information.

Write to the Arcair Co., Dept. C&E, P. O. Box 431, Lancaster, Ohio, or use the Request Card at page 18. Circle No. 8.

**Batch controllers, recorders**—an illustrated brochure describing Johnson automatic electro-mechanical controllers and recorders for concrete batching. Discusses many different Johnson units, including a 60-mix controller-recorder for cement, water, and multiple aggregate batchers; and a 120-mix controller-recorder for single material batchers.

Write to the C. S. Johnson Co., Dept. C&E, P. O. Box 71, Champaign, Ill., or use the Request Card at page 18. Circle No. 12.

**Concrete-joint forms**—literature on Ceco-Meyer Steelforms for use in forming concrete-joint slab construction. Contains complete tubular data and descriptions of forms of the Steeldome, flange, adjustable, and Longform types. Also includes concrete quantity tables for all four types. Manual No. 4001-N.

Write to the Ceco Steel Products Corp., Dept. C&E, 5601 W. 26th St., Chicago 50, Ill., or use the Request Card at page 18. Circle No. 108.

**Ripping with seismic analysis**—a brochure telling how earthmoving costs can be reduced by the use of crawler-drawn rippers, instead of blasting, in some materials. Discusses the principles, method, and operating technique of seismic analysis. Includes a table showing the rippability of various materials such as limestone, sandstone, gneiss, caliche, and conglomerate. Pamphlet No. 33793.

Write to Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 109.

**Cost-estimating guide**—a comprehensive 76-page book dealing with factors necessary for profitable earthmoving and pipelining operations. Profusely illustrated with charts, diagrams, tables, and formulas.

Write to the International Harvester Co., Construction Equipment Division, Dept. C&E, 180 N. Michigan Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 110.

**Transit mixers**—a well illustrated booklet on Worthington's new transit mixers. Highlights major components of a typical unit. Optional equipment listed. Booklet 6505-B1B.

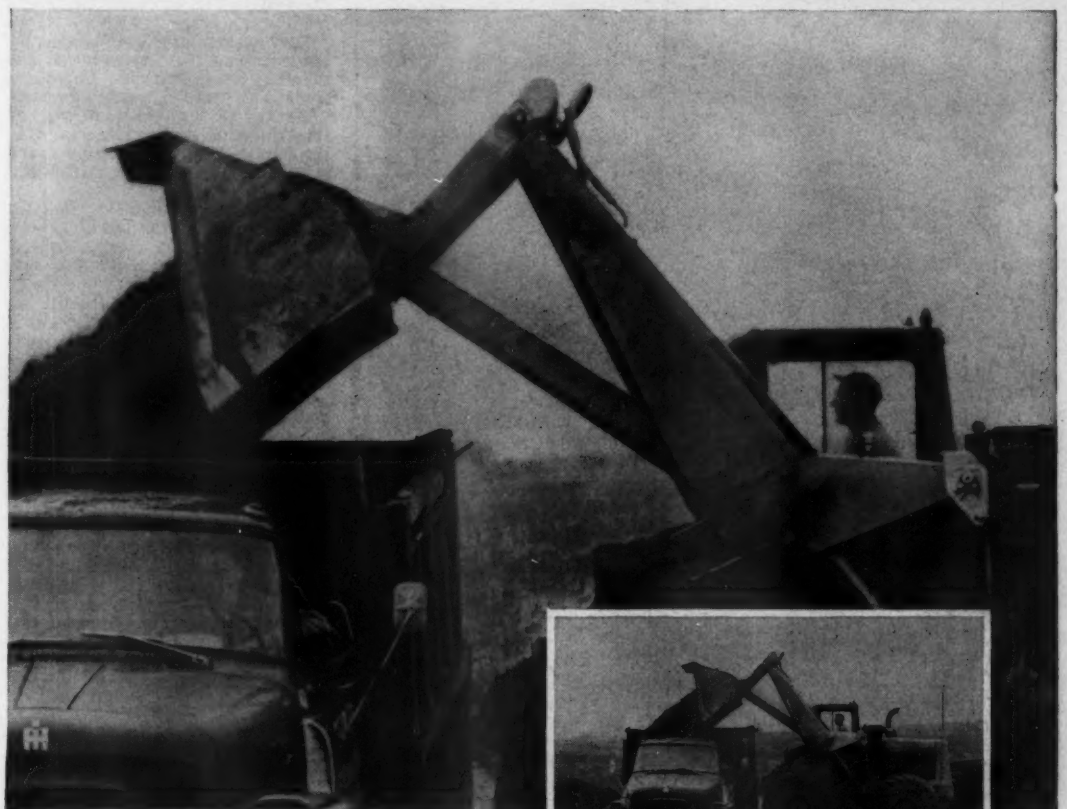
Write to the Worthington Corp., Plainfield Division, Dept. C&E, Plainfield, N. J., or use the Request Card at page 18. Circle No. 111.

**Sand equivalent test**—a bulletin describing the method for the sand equivalent test, a rapid field test that shows the relative proportion of detrimental fine dust or claylike material in soils or fine aggregates. Contains complete instructions for performing the test, as well as photographs of

actual procedures and required apparatus.

Write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 28.

**Tandem rollers**—a catalog covering the Gallion 5 to 8, 8 to 10½, 8 to 12, and 10 to 14-ton Roll-O-Matic tandem rollers. Stresses various construction and operation features such as dual controls, hydraulic steering, spur-gear final drive, and torque converter with tail-shaft governor and



Safety lift arms allow complete side vision when bucket is raised . . . eliminate hazardous "scissor" action. Dump height and forward reach are designed for fast loading.

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2-range transmission. Gives complete specifications and compression data. Catalog No. 425.

Write to The Gallion Iron Works & Mfg. Co., Dept. C&E, Gallion, Ohio, or use the Request Card at page 18. Circle No. 112.

**Equipment trailers**—literature describing Transport Trailers' Model GTY triple-axle equipment trailers, available with 20-inch wheels and ranging in capacity from 30 through 60 tons. Complete details and specifications.

Write to Transport Trailers, Inc., Dept. C&E, P. O. Box 968, Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 113.

**Torque converter**—a folder describing the new Clark air-cooled torque converter for such applications as small road rollers and other construction machines. Illustrations in-

clude a typical performance curve, dimensioned exterior drawings, and a cutaway section. Form N1-9.

Write to the Clark Equipment Co., Automotive Division, Dept. C&E, Jackson, Mich., or use the Request Card that is bound in at page 18. Circle No. 114.

**Welders**—a bulletin on the new weatherproofed Sureweld dc arc-welding units. Gives features and specifications for the three models in the DRH series: 222A, with 200-amp rated welding current; 333A, with 300-amp rated welding current; and 444A, with 400-amp rated current. Optional equipment and accessories described and illustrated. Bulletin NH-162.

Write to the National Cylinder Gas Division, Chemetron Corp., Dept. C&E, 840 N. Michigan Ave., Chicago 11, Ill., or use the Request Card at page 18. Circle No. 115.

**Natural-gas engines**—a booklet on the complete line of Caterpillar natural-gas engines for a wide variety of applications. Includes model views, specifications, and fuel-consumption curves of current models. Photographs and job stories illustrate actual performance. Booklet No. 20173.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the card at page 18. Circle No. 116.

**Electronic surveying**—an illustrated brochure describing the principles of precise distance measurement with microwaves. Contains a general explanation of the Tellurometer system for determining distance between points 500 feet to 40 miles apart. Includes description of the Micro-Distancer Model MRA-2, a completely redesigned system built around interchangeable units. Bulletin No. 31-A.

Write to Tellurometer, Inc., Dept. C&E, 206 Dupont Circle Bldg., Washington 6, D. C., or use the Request Card at page 18. Circle No. 117.

**Crane-excavator**—a catalog on the American 200 Series crawler excavator-crane. Describes and illustrates such features as the new positive-pressure backhoe and positive rope crowd shovel attachment. On-the-job photographs illustrate the machine's versatility. Catalog No. 720-CG-3.

Write to the American Hoist & Derrick Co., Dept. C&E, 63 S. Robert, St. Paul 7, Minn., or use the Request Card at page 18. Circle No. 118.

**Tilting mixers**—a brochure on improved Koehring-Johnson tilting concrete mixers available in capacities of 2 to 7½ cubic yards. Illustrates hardsurfaced drum interior with extra-thick replaceable steel mixing blades; simple, maintenance-reducing construction of frame and electric-motor drive; hydraulic rams that quickly discharge the mixer and return it to mixing position; packaged hydraulic power unit that operates up to 5 mixers; and design features that permit several mixers to be fed by a single charging chute and discharged through a large common hopper.

Write to the C. S. Johnson Co., Dept. C&E, P. O. Box 71, Champaign, Ill., or use the Request Card at page 18. Circle No. 119.

**Concrete adhesives**—a handbook of application methods for bonding concrete with Thiokol E-Bond epoxy adhesive. Covers surface preparation, equipment required, mixing procedures, and curing and use of solvents in the adhesives. Also contains useful tables on the "effect of temperature on curing time."

Write to the International Epoxy Corp., Dept. C&E, 501 N.E. 33rd St., Fort Lauderdale, Fla., or use the Request Card at page 18. Circle No. 120.

**Fluid clutch couplings**—an illustrated bulletin describing the complete line of Twin Disc fluid couplings designed for a horsepower range of ¼ to 850. Gives details on basic couplings for OEM application, as well as package units with a wide variety of input-output combinations. Also includes a comprehensive discussion of fluid-coupling performance characteristics with both internal-com-



## New Haven Bridge Project



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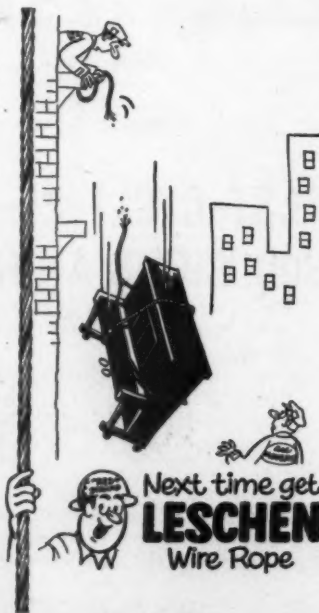
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combustion engines and electric motors. Bulletin 144-E.

Write to the Twin Disc Clutch Co., Dept. DS, Dept. C&E, Racine, Wis., or use the Request Card at page 18. Circle No. 14.

**Portable diamond drills**—literature describing three models of Varel portable diamond drills: Vanguard I, for holes up to 1 inch; Vanguard II, for holes up to 4 1/4 inches; and Vanguard III, for holes up to 9 inches. Brief data on concrete core bits. Text illustrated with photographs.

Write to the Varel Diamond Products Co., Dept. C&E, 9230 Denton Drive, Dallas 20, Texas, or use the Request Card that is bound in at page 18. Circle No. 121.

**Bucket elevators**—a catalog on Andrews bucket elevators, complete with all specifications. Covers both belt and chain elevators in single and double casing design. Three standard series are included in a range of capacities from 280 to 8,835 cubic feet per hour. Recommendations given on the types of elevators best suited for the handling of 65 different materials. Catalog No. 9658.

Write to the Andrews Machine Co., Dept. C&E, 359 E. Main St., Decatur, Ill., or use the Request Card at page 18. Circle No. 122.

**Material-handling equipment**—a catalog on E. D. Bullard safety material-handling equipment and accessories. Includes information on type, size, and ordering requirements for safety hooks for hoists, cranes, and pullers; safety insulated links; and mechanical backup alarms. Illustrated with drawings and photographs. Catalog No. 60.

Write to the E. D. Bullard Co., Dept. C&E, 2680 Bridgeway, Sausalito, Calif., or use the Request Card at page 18. Circle No. 123.

**Automatic batching**—a bulletin covering the new Rex punch-card automation for automatic batching. Offers detailed descriptions and illustrations of the system's equipment, and outlines how it is used to reduce manpower, save materials, and handle batch-size variations from one to any number of yards—in 1/4-yard increments. Bulletin 60216.

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**Power tools**—a 64-page catalog covering the complete Skil line of industrial and automotive power tools. Includes detailed and well illustrated descriptions of drills, Roto-Hammers and accessories, saws and saw blades, and many others. Specifications given.

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**Mobile welding outfit**—a folder describing the International TD-15-500-1 Paywelder, a mobile welding unit. The rig carries two 325-amp dual welders with four leads, constituting a compact 120-hp package capable of pushing through swamps and over mountains. Folder CR-687-K.

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**Mobile radio equipment**—a booklet containing complete descriptions of all Motorola 2-way mobile radio base-station equipment. Includes specifications and photographs of upright cabinets, remote-control and desktop consoles, and special ac utility base stations. Also devotes several pages to descriptions of the various base-station antennas, monitor receivers, and the Company's Quik Call selective signaling system.

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**Reversible fan**—a brochure describing the Huber reversible fan for heavy equipment. According to the literature, in addition to cooling the engine, this fan can be reversed by the operator, in less than 2 minutes, to either suck warm air or blow it out.

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**Improvement of secondary roads**—a booklet entitled "Progressive Improvement of Secondary Roads." Describes and illustrates the benefits of calcium chloride in stage construction to accelerate paving roads that now merit a higher-type surface. A section is devoted to im-

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**Hardsurfacing**—an illustrated booklet on manual hardsurfacing. Discusses the economics and metallurgy of hardsurfacing, analyzes the various conditions that demand hardsurfacing, and provides information concerning electrode selection and procedures that will produce the type

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Write to The Lincoln Electric Co., Dept. C&E, P. O. Box 3115, Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 127.

**Off-highway transport**—a brochure describing and illustrating Easton off-highway transportation equipment. Gives information on the Model TP pan-type trailer with either straight or low frame; Model TD drop-door trailers, straight or low frame; and a series of side-dump truck bodies and trains. Catalog A.

Write to the Easton Car & Construction Co., Dept. C&E, Easton, Pa., or use the Request Card at page 18. Circle No. 128.

(Continued on next page)



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Heap-load the big-target Payhauler body in minimum time. Strong rock-ribbed corrugations absorb shock—resist wear and distortion. Choose the "95" with power-shift Torque-Converter, or 9-speed air-shift transmission.



**New strength-multiplying** corrugated body design results in payload-gaining weight reduction of both International Payhauler models. New "95" capacity is increased to 27 tons—and the new "65" becomes the only 19-tonner on the market!

**Look at those exclusive, rock-ribbed body corrugations!** International applies this strength-multiplying principle to reduce Payhauler® body weight by an amazing 30%! You "trade" 2 1/2 tons of power-wasting dead weight for 3 bonus tons of payload capacity in the new 95 Payhauler!

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**Prove to yourself** that top load-carrying capacity plus top power-to-weight ratio give 95 Payhaulers tremendous profit-earning advantages. Add up other big Payhauler exclusives: fast reverse, up to 7.1 mph. for spotting speed; big-target bodies for loading zip; 11-second inverted-hoist dumping; load speeding safety of torqmatic braking and positive power-steering! Let your International Construction Equipment Distributor demonstrate!



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**Material handling**—a brochure on the Drott Go-Devil Model 20RM2, a tractor crane designed primarily for material handling. Details construction and operating characteristics of the 2,000-pound-capacity unit, and is illustrated with photographs and drawings.

Write to the Drott Mfg. Corp., Dept. C&E, 3126 S. 27th St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 27.

**Motor graders**—a bulletin on Huber-Warco 8-D, 9-D, 10-D, and 11-D motor graders with standard transmission. Describes the construction of the graders and their features, including the new constant-mesh transmission. Large photographs, cut-away views used throughout.

Write to the Huber-Warco Co., Dept. C&E, Box 501, Marion, Ohio, or use the Request Card at page 18. Circle No. 129.



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to tie main and cross lurring together.

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**Refractory anchor**—a bulletin describing the new France MA-900 refractory anchor for castable construction. Includes illustrations of the anchor, installation cross sections, and dimensional drawings of the unit, which is available in 3-inch lengths for 5-inch wall construction; 5-inch lengths for 7-inch walls; 7-inch lengths for 9-inch wall thicknesses; and 9-inch lengths for 13½-inch wall construction. Bulletin 725.

Write to J. H. France Refractories Co., Dept. C&E, 1944 France Road, Snow Shoe, Pa., or use the Request Card at page 18. Circle No. 9.

**Diamond bits, core barrels**—a bulletin describing the complete Acker line of diamond bits, core barrels, rotary rock bits, and drag-type bits. Over 50 illustrations, with core barrels illustrated in sectional cutaways to expose internal detail and operation. Bulletin No. 10.

Write to the Acker Drill Co., Inc., Dept. C&E, P. O. Box 830, Scranton 2, Pa., or use the Request Card at page 18. Circle No. 130.

**Open-chain lubricant**—a folder on a new Whitmore lubricant said to substantially lengthen the work life of open chains. Illustrates many types of conveyor, transmission, and elevating chains, and indicates the critical points that benefit from specialized open-chain lubrication.

Write to The Whitmore Mfg. Co., Dept. C&E, Drawer 160, Station "C," Cleveland, Ohio, or use the Request Card at page 18. Circle No. 42.

**Crawler tractor**—a well illustrated 16-page booklet on the Cat D9 Series E crawler tractor. Construction and operating characteristics, as well as maximum drawbar pounds pull available with each type, are given. A complete listing of all matched equipment is included. Form No. 33443.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the card at page 18. Circle No. 131.

**Crane-excavator**—a bulletin on the Heco Model RM-500 crane-excavator (¾-yard excavator, 11-ton crane) in combination with the Model 613 carrier. Well illustrated with drawings, charts, and graphs. Specifications included.

Write to the Heco Division, Hardwicke-Etter Co., Dept. C&E, Sherman, Texas, or use the Request Card at page 18. Circle No. 132.

**Waterstop**—a technical manual on the Kwik-Seal waterstop. Contains 51 drawings and photographs. Subjects include sizes and shapes of the waterstop, comparative data for rubber and plastic waterstops, handling and storage of the material, and application data.

Write to The Gates Rubber Co., Industrial Division, Dept. C&E, 999 S. Broadway, Denver 17, Colo., or use the Request Card at page 18. Circle No. 19.

**Aggregate reclaimer**—a fact sheet on the Worthington aggregate reclaimer, designed to separate the cement, water, and stone or gravel in left-over mixed concrete. Text illustrated with photograph and drawing. Complete specifications.

Write to the Worthington Corp., Plainfield Division, Dept. C&E, Plainfield, N. J., or use the Request Card that is bound in at page 18. Circle No. 133.

**Lightweight concrete**—a bulletin describing the role played by Pozzolite in providing workability for proper placement of lightweight concrete while economically maintaining sufficient strength to meet structural requirements. Thirteen construction projects are featured. Bulletin MBR-P-14.

Write to The Master Builders Co., Dept. C&E, 7016 Euclid Ave., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 134.

**Crawler tractor**—a catalog on the International TD-25 diesel crawler tractor. Profusely illustrated with photographs and cutaway diagrams, the catalog depicts high lights of the torque-converter and gear-drive versions of the 230-engine-horsepower machine. Catalog CR-791-I.

Write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the card at page 18. Circle No. 135.



**It's Jaeger's new 3" pump... the "3PN"**  
Out-performs all previous models

Pumps all the water a 3" suction hose can handle. With 4" suction hose pumps 28,000 gph at 10' lift. Sure-priming is correspondingly fast, at all practical lifts.

**AND LOOK HOW EASY TO MAINTAIN!**  
Suction chamber and liner are removable for quick adjustment, rotation or replacement of liner plate. (New Model 3XPN offers same feature in a smaller pump.) See your Jaeger distributor or send for catalog.

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AIR COMPRESSORS • MIXERS • PAVING, SPREADERS and FINISHERS

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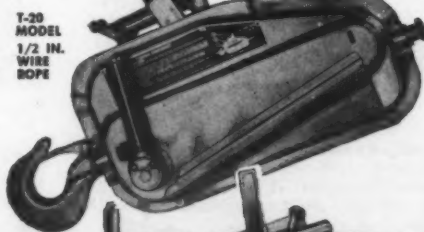
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**GRIPHOIST, INC.**  
744 Harrison St., San Francisco 7, Calif.

CONTRACTORS AND ENGINEERS



**Equipment hauler**—literature giving detailed information and specifications on the Transport Trailers Model GTRX removable-goose-neck semitrailer ranging in capacities from 30 to 60 tons. Lists such features as one-man operation, fewer moving parts, no cribbing, and positive coupling and locking.

Write to Transport Trailers, Inc., Dept. C&E, P. O. Box 968, Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 136.

**Vibratory roller**—a fact sheet illustrating and describing the Western Vibratrol Model 4T tractor-drawn roller. According to the literature, the Model 4T offers compaction equal to that of a 20-ton deadweight roller. Specifications included.

Write to the Douglas Motors Corp., Western Equipment Division, Dept. C&E, 1234 N. 62nd St., Milwaukee 13, Wis., or use the Request Card at page 18. Circle No. 26.

**Tools**—an illustrated bulletin describing more than 60 Greenlee tools including hydraulic pipe pushers, cable pullers, hydraulic knockout punch drivers and sets, portable high-pressure hydraulic power pumps, and the firm's complete line of power bits, pipe bits, auger bits, chisels, and allied tools. Bulletin E-240.

Write to the Greenlee Tool Co., Dept. C&E, 2136 12th St., Rockford, Ill., or use the Request Card at page 18. Circle No. 137.

**Arc-welding guide**—"Vest Pocket Guide to Better Welds," a revised edition of "How to Get Better Welds." Contains 80 pages of arc-welding information, covering such subjects as examples of good and bad welds, operator qualifications, identification of metals, causes and cures of common welding troubles, cost-saving hints, and welding power sources. Illustrated with drawings.

Write to the Hobart Bros. Co., Dept. C&E, Hobart Square, Box 8129, Troy, Ohio, or use the Request Card at page 18. Circle No. 44.

**Wire rope**—a handbook on the correct way to use wire rope and slings to add to their service life. Also discusses common abuses. Illustrated with drawings.

Write to the Union Wire Rope Corp., subsidiary of Armco Steel Corp., Dept. C&E, 2280 Manchester Ave., Kansas City 26, Mo., or use the card at page 18. Circle No. 138.

**Crane-excavator**—a bulletin on the Lorain Moto-Loader Model ML-157 with 7,000-pound carry capacity. Details design and construction features and shows the machine in action at job sites. According to the literature, the Moto-Loader may use 1½ to 3-yard buckets depending on material to be lifted, and it may be equipped with such attachments as crane hooks, backfiller blades, fork-lift, backhoe, side boom, or snowplow. Form No. 26752-0.

Write to The Thew Shovel Co., Dept. C&E, 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 11.

**Pipe bending**—a bulletin, "Bending Conduit or Pipe Easily and Accurately." Includes the following subjects: calculating lengths of legs; locating the bend; back-to-back method; back-to-back push-through method; offset bends. Bulletin No. 260.

Write to Lidseen of North Carolina, Inc., Dept. C&E, 1065 First St., Hayesville, N. C., or use the Request Card at page 18. Circle No. 7.

**Fastening tools**—a catalog on Ramset powder-actuated fastening tools and accessories. Technical data and illustrations; information on working loads. Form B-141.

Write to the Ramset Fastening System, Olin Mathieson Chemical Corp., Dept. C&E, 289 Winchester Ave., New Haven, Conn., or use the Request Card at page 18. Circle No. 10.

For more facts, use Request Card at page 18 and circle No. 354

**Tractor shovels**—a bulletin describing the power, speed, and handling characteristics of six Michigan tractor shovels. Covers Models 55A, 55B, 75A, 85A, 125A, and 175A, and is thoroughly illustrated with working drawings and photographs. Bulletin No. 3000.

Write to the Construction Machinery Division, Clark Equipment Co., Dept. C&E, P. O. Box 599, Pipestone Plant, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 5.

**Conveyor-belt idler**—a bulletin describing the Joy Series 200 Limberoller belt-conveyor idler, an improved version of the original 2-bearing catenary idler. Contains complete specifications, a detailed description

of construction features, installation photographs, and application instructions. Bulletin LD-111.

Write to the Joy Mfg. Co., Dept. C&E, 333 Henry W. Oliver Bldg., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 139.

**Crane-excavator**—a catalog on the Manitowoc Model 2000 1¼-yard shovel, which is also convertible to crane, dragline, and trench-hoe applications. Contains numerous photos to illustrate the stable crawler base, Power-Flo train, upper-deck features, simple counterweight removal, and ease of shipment on trailers or rail.

Write to the Manitowoc Engineering Corp., Dept. C&E, 16th and River Sts., Manitowoc, Wis., or use the Request Card at page 18. Circle No. 17.

**Concrete plants**—an illustrated brochure on Plant City concrete plants. Covers stationary ready-mix and block plants. Also discusses the firm's pre-assembled belt conveyors; cement silos, elevators, and screw conveyors; automatic and manual weigh batchers; and a variety of accessories.

Write to the Plant City Steel Corp., Dept. C&E, P. O. Box 1308, Plant City, Fla., or use the Request Card at page 18. Circle No. 140.

**Crawler tractor**—a booklet on the new Caterpillar D4 Series C tractor. Emphasizes the high ground clearance of the D4, as well as its traction and ability to perform on extremely soft footings. The literature points out that the versatility of the D4 is

## Depend on EUCLID'S GREATER DIMENSION for lower hauling costs



greater range of types and capacities  
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Model R-27 has rated payload of 54,000 lbs. and a heaped capacity of 26½ yds. . . available with Cummins 335 h.p. and GM 336 h.p. engine . . . 4-speed Torqmatic Drive with converter lock-up and Torqmatic Brake . . . dual hydraulic booster steering . . . 18.00 x 25 tires on all wheels . . . rugged body with twin hoists . . . top speed with full payload, 34 mph.

Backed by better than 25 years of specialized experience in building off-highway earthmoving equipment exclusively, Euclid's modern rear-dump line incorporates advanced engineering that is a result of unmatched field experience. From the 10-ton Model R-10 to the big 55-ton "Euc" with two engines and a total of 672 h.p., Euclid Rear-Dumps meet today's requirements for big performance.

This greater dimension . . . in a wide range of capacities, in choice of engines, transmissions, tire sizes, and in type of hauler . . . in the parts and service facilities of Euclid's world-wide dealer organization, too . . . can mean lower hauling costs on all kinds of earthmoving jobs.

**EUCLID Division of General Motors, Cleveland 17, Ohio**  
Euclid (Great Britain) Ltd., Lanarkshire, Scotland

A complete line of rear-dumps with payload capacities of 10, 15, 18, 22, 27, 40 and 55 tons . . . also semi-trailer models of 12, 22, 35 and 50-ton capacity.



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FOR MOVING EARTH, ROCK, COAL AND ORE

increased by hydraulically operated draft arms that mount a tool bar or, when swung forward, two kinds of bulldozers. Form 33550.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 6.

**Welders**—literature describing 40 different models of Miller welders. Text illustrated with photographs; specifications included.

Write to the Miller Electric Mfg. Co., Dept. C&E, 718 S. Bounds St., Appleton, Wis., or use the Request Card at page 18. Circle No. 64.

**Moisture, density probes**—a new bulletin on the Nuclear-Chicago d/M-Gauge probes for surface moisture and density measurements of soils and similar materials. Gives complete specifications for the instruments, and photos show their correct use for both moisture and density tests in con-

junction with soil-compaction work.

Write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 141.

**Crane-excavator**—an illustrated booklet covering the Manitowoc Model 3600 3-cubic-yard-capacity shovel, which is also convertible to trench-hoe, dragline, crane, and clamshell applications. Gives full specifications.

Write to the Manitowoc Engineering Corp., Dept. C&E, 16th and River Sts., Manitowoc, Wis., or use the Request Card at page 18. Circle No. 142.

**Belt-conveyor idlers**—a booklet on Hewitt-Robins belt-conveyor idlers. Includes details of construction, data on selection and procedure, as well as engineering tables, dimensions, and specifications. Covers most of the standard 134 styles of idlers

that the firm manufactures. Drawings and photographs. Bulletin No. 171.

Write to Hewitt-Robins, Inc., Dept. C&E, 666 Glenbrook Road, Stamford, Conn., or use the Request Card at page 18. Circle No. 143.

**Clamshell, dragline bucket**—an illustrated catalog covering all types and sizes of Williams clamshell and dragline buckets and stone grabs. Details the principles of bucket operation and selection, and includes complete, easy-to-read specification charts. Form 601.

Write to The Wellman Engineering Co., Dept. C&E, 113 St. Clair Ave. N.E., Cleveland 14, Ohio, or use the Request Card that is bound in at page 18. Circle No. 144.

**Pumps**—a bulletin illustrating and describing the Aurora centrifugal and Apco turbine-type pumps (single and multiple-stage; flexible and close-coupled; horizontal and vertical). Data on typical applications, specifications included. Capacities range from 1 to 9,000 gpm, and heads to 600 feet.

Write to the Aurora Pump Division, The New York Air Brake Co., Dept. C&E, Loucks at Dearborn, Aurora, Ill., or use the Request Card at page 18. Circle No. 43.

**Concrete carriers**—a bulletin on Oshkosh all-wheel-drive concrete carriers. According to the literature, these units feature choice of front crankshaft-driven or flywheel-driven power takeoffs, factory-installed to fit any desired mixer. Illustrated with photographs.

Write to the Oshkosh Motor Truck Co., Dept. C&E, P. O. Box 220, Oshkosh, Wis., or use the Request Card at page 18. Circle No. 145.

**Electrode holder**—a data sheet describing a Nottingham air-cooled electrode holder for heavy-duty metallic arc welding, said to permit a man to weld a full shift without changing holders and to eliminate water-cooling hazards and complications. Ratings and specifications given; design and construction features summarized.

Write to J. B. Nottingham & Co., Inc., Dept. C&E, 441 Lexington Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 146.

**Circular slide rule**—a handy pocket-size circular slide rule, offered free of charge. Operation of the rule is said to be simple and to produce accurate results. Complete easy-to-follow instructions included. Request should be made on business letterhead.

Write to the General Industrial Co., Dept. C&E, 1788J Montrose Ave., Chicago 13, Ill., or use the Request Card at page 18. Circle No. 13.

**Ripper**—a bulletin describing the Greenville Brute, a new, heavier ripper for use with International TD-20 crawler tractors. Gives operating data and dimensions, and shows shanks, points, and push-blocks available for use with the ripper. Bulletin GR 25-160.

Write to The Greenville Steel Car Co., Dept. C&E, Greenville, Pa., or use the Request Card at page 18. Circle No. 147.

**Crawler tractor**—literature describing the Euclid Model C-6 crawler tractor. Well illustrated with action photographs, the booklet describes several types of operations for which this 211-hp tractor was used. Form No. 608.

Write to the Euclid Division, General Motors Corp., Dept. C&E, 1381 Chardon Road, Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 148.

**Power tools**—a brochure on Syntron portable power tools. Complete data and specifications on self-contained electromagnetic hammers and drills, gasoline-hammer paving breakers and rock drills, pulsating magnet form vibrators, and vibrating concrete floats. Over 70 illustrations.

Write to the Syntron Co., Dept. C&E, 227 Lexington Ave., Homer City, Pa., or use the Request Card at page 18. Circle No. 21.

**Carbon arc welding**—an instruction manual describing the operation and use of the carbon arc-welding process. Points out that carbon arc torches can be used for numerous industrial welding applications and also in the smaller shop. Many applications are illustrated.

Write to the Arcair Co., Dept. C&E, P. O. Box 431, Lancaster, Ohio, or use the Request Card at page 18. Circle No. 54.

**VULCAN**  
**DGH-100A**  
**HAMMER**

**SPEEDS WORK...**

**REDUCES COST**

**in breaking concrete**

Breaking concrete in a big way is nothing new for the Vulcan Model DGH-100A Differential-Acting Hammer but here is a unique application in which it does a really magnificent job.

The hammer, with wedge tool, mounted on the front of a compact, highly mobile tractor-loader, is breaking an unusually heavy concrete floor in a large steel mill quickly and efficiently and with a minimum of disturbance to surrounding areas.

It is significant that the VULCAN DGH-100A used less air than the jack hammers and paving breakers it replaced. No portable air compressor was required since the factory air line was adequate. All in all its operation was highly satisfactory and exceeded all expectations.

You'll be amazed at the number of jobs the DGH-100A can handle. Put it to work on any job you have and you'll find out why it's the favorite with contractors everywhere.

*Ask for full information*



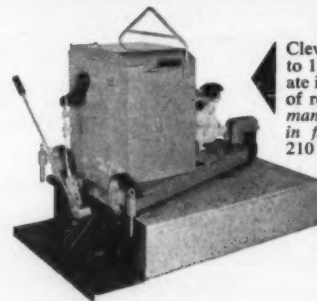
MANUFACTURERS OF PILE DRIVING HAMMERS AND PILING EXTRACTORS SINCE 1852

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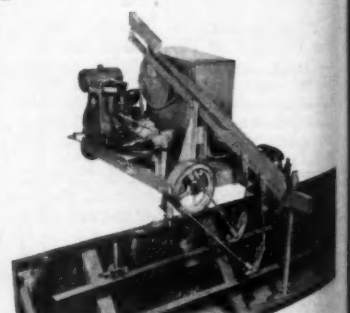
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## PIN PULLER INCREASES PRODUCTIVITY 1000%



Cleveland Power Pin Puller for road forms pulls up to 1500 pins per hour, needs only one man to operate it, pulls pins out straight, operates on either side of road—in either direction. Safe, efficient, pulls at many pins in two hours as four men normally pull in five hours! Maximum load on concrete only 210 lbs.

Cleveland Self-Propelled Pin Puller operates efficiently on airport as well as road forms. Has all the advantages of the Power Pin Puller—plus, is self-propelled, operating on 4 wheels with operator riding. Has forward-neutral-reverse transmission.



Manufacturers of a complete line of paving equipment. See your Form-grader distributor.

**THE CLEVELAND FORMGRADER CO.**

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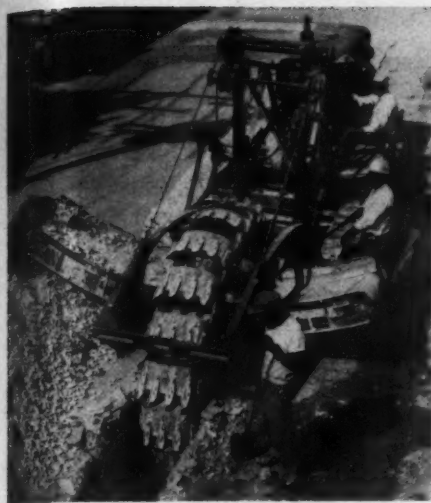
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ENGINEER



CHEWING NEATLY through the coral-rock stratum underlying Miami is this 14-ton Buckeye ditch digger, one of seven digging machines used by Miami's Water and Sewer Department. Extra buckets have been added to the digging wheel to make a faster cut.

### Lincoln promotes welding engineers

■ The Lincoln Electric Co., Cleveland, Ohio, has named Harold D. Ballard to its sales force. He will work out of the Milwaukee office, handling accounts in that city and the southern part of Wisconsin. A one-year training program at Lincoln has prepared him to handle customer requirements in applying the arc-welding process. Ballard's predecessor in the post, Donald E. Bly, has been transferred to Appleton, Wis., to cover northern Wisconsin and the Upper Peninsula of Michigan.

### Administrative engineer named by Marion Shovel

■ The new position of administrative engineer at Marion Power Shovel Co., Marion, Ohio, has been filled by Myron Geller. He will work with the company's full product line.

Geller's previous job of sales manager for small machines has been assigned to Anthony M. Colatrino, formerly sales vice president at Orton Crane & Shovel Co.

### Sonneborn assigns

■ The Sonneborn Chemical & Refining Corp., New York, N. Y., has named William R. Appleby to be manager of domestic operations in its building-products division. For the past year, he has been assistant to the president of the company.

### Ohio sales manager for Armco Drainage

■ New state sales manager in Ohio for Armco Drainage & Metal Products, Inc., Middletown, Ohio, is John R. Coffey. He will make his headquarters at the Columbus office. Coffey, who joined the company in 1949, succeeds Paul O. Hansen.

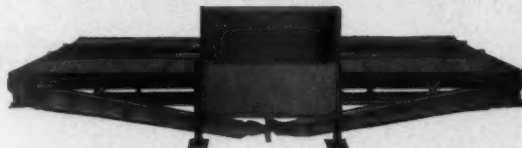
### Kohler names salesman

■ Kohler Co., Kohler, Wis., has named William H. Wahlberg engine and electric-plant salesman covering the area of northern Texas, northern Louisiana, and all of New Mexico. He will make his headquarters in Dallas.

A special committee created by the Highway Research Board in 1958 has recommended, after two years of study, an expanded program of highway research, extending over the next four or five years at an estimated cost of \$34 million, and covering 19 broad areas rated A-1 in urgency.

## WINSLOW—PORTABLE TRUCK SCALE

### THE CONTRACTORS' SPECIAL SCALE



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 40 and 50 tons.

Write us for name of your nearest distributor.

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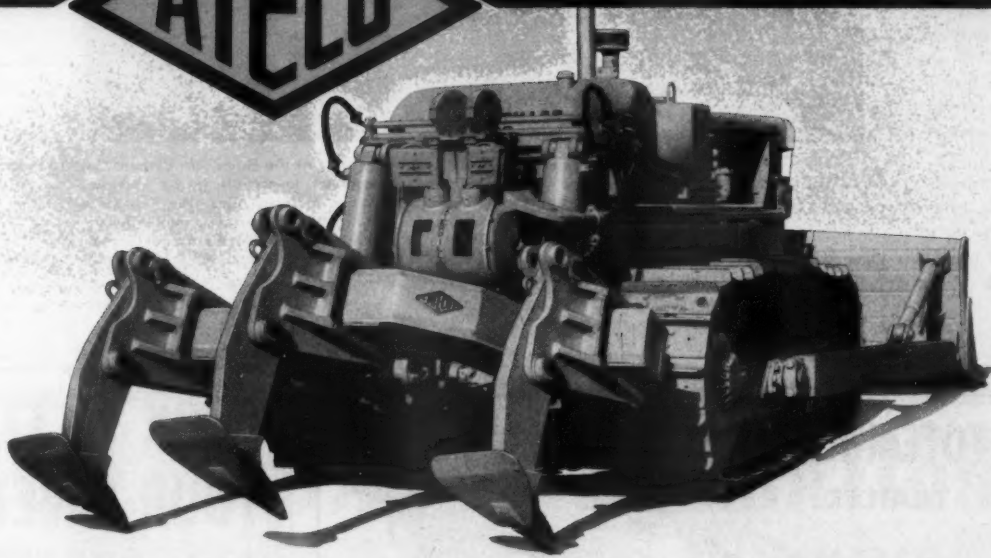
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# EXCLUSIVE \* A Tractor-Mounted Ripper That Leaves ROOM FOR A WINCH!

New



HR48-D8H Rock Ripper



Here's a way to get the absolute most out of your D8H... equip it with an ATECO HR48 rock ripper. You'll still have plenty of room for a double-drum PCU winch on the rear to operate a dozer or other cable-operated equipment.

Only ATECO... pioneer in tractor-mounted rippers... offers this valuable feature plus these performance-boosters:

**BEEFED-UP TOOL BEAM** of 1½" steel plate all around, 11" x 12½" section, box-welded and internally reinforced—most rugged D8 tool beam on the market!

**EXTRA CLEARANCE** to prevent clogging... 14" minimum under tool beam when ripping; swing bracket holes moved back to put shank farther behind beam. On offset beam, center shank is 20" back of outside shanks for easier rock breaking and more clearance.

**"RUGGEDIZED" THROUGHOUT**... 30% larger cylinders with 43% heavier rods; 50% stronger draft arms with no top or bottom welds; extra-thick replaceable wear pads on swing brackets; heavier cylinder support brackets.

ATECO builds the most complete line of job-proved tractor mounted rock rippers in the world. They're available for practically every popular make and model of heavy duty crawler tractor. Why not get the facts? Write today for literature, specifications.

American



**TRACTOR EQUIPMENT  
Corporation**

Designers and Manufacturers  
Since 1920

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JULY, 1960

## Slip forms raised by pneumatic jacks

Columns, man-lift shaft, and bucket-elevator shaft  
are cast monolithic with silos in complex slip form



Slip-forming techniques were used for the 19 silos at the Hawaiian Cement Co. plant on Oahu. Raw materials dumped to hoppers, lower left, go by conveyor to the crushing-screening plant, then to the raw-material silos. The first three are 90 feet high. The next group is 135 feet high. Of these taller ones, the last two are for clinker storage. The three smaller silos beside them are homogenizers. The cluster of eight behind the tall group is for storage of finished cement. Kiln and clinker cooler are at right.



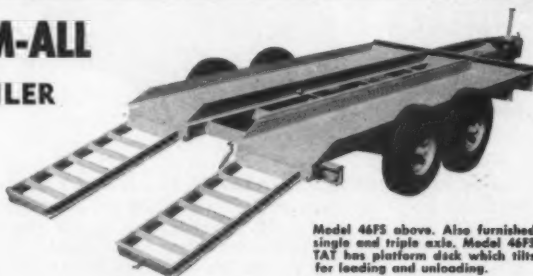
Monday: Slip forming starts on the Hawaiian Cement Co. finished-cement storage silos for the plant at Oahu, Hawaii. The form includes a man-lift shaft, bucket-elevator housing, and columns supporting ring girders for the bin bottoms.

Pneumatically operated jacks raised the slip forms for casting the largest structural elements—the silos—of both of Hawaii's new cement plants.

At the Hawaiian Cement Co. plant, the 19 silos were cast in four clusters. The smallest is the group of three homogenizing tanks, 30 feet in diameter and 53 feet tall. The tallest are the five raw-material and clinker storage bins, 36 feet in diameter and 135 feet tall. These were cast in clusters of three, five, or eight. The most complex was the group of eight finished-material silos, 32 feet in diameter and 100 feet tall.

A few miles away, at the Permanente Cement Co. plant using the wet process, are two slurry tanks 77 feet 8 inches in diameter and 35 feet high and a trachyte storage tank 37 feet in diameter and 24 feet tall, in

### TOTEM-ALL TRAILER



Model 46FS above. Also furnished single and triple axle. Model 46FS TAT has platform deck which tilts for loading and unloading.

Hitched to a pick-up truck, a TOTEM-ALL Trailer hauls small crawlers, tractors with front end loaders, back hoes, scraper blades, trenchers and similar equipment. TOTEM-ALL Trailers are easy to load and unload — move equipment easily and in less time and at less expense. Capacity of tandem-axle TOTEM-ALL is 12,000 lbs., and of triple-axle TOTEM-ALL is 17,000 lbs. All models are equipped with double electric brakes. Specifications mailed on request.

Write or phone

**TOTEM-ALL, INC.**

Birmingham  
Manufacturing Co., Inc.

14 South 55th St.

P.O. Box 2805

Phone LY. 2-0201

Birmingham, Ala.



## LOOK TO FLINTKOTE FOR ALL YOUR PAVEMENT SEALING AND REPAIR PRODUCTS...

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CONTRACTORS AND ENGINEERS

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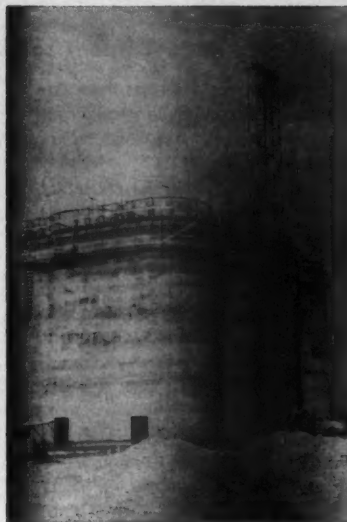
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**Tuesday:** Concrete delivered by transit mixers is raised in the 1 1/2-yard skip of the American Tubular Scaffolding double tower to a hopper. Chutes in a Y arrangement lead to two Gar-Bro 1-yard deck hoppers that fill buggies.



**Wednesday:** The silo is well above ground, going up at a rate of some 13 inches per hour. Pneumatic Jack Co. jacks are being used. The 102 jacks have 14-inch diaphragms and are rated at 5 tons each.



**Thursday:** The jacks can be adjusted from 1/4 to 3/8 inch per step. Up to 30 jacks are connected to a single control valve. Timber jacking yokes attach the form to the jacks, which ride 1-inch jacking rods encased in the concrete.



**Friday:** The silos at 11:15 a. m., when all these photos were taken. These 32-foot-diameter silos, 100 feet tall, as well as most of those at the Permanente plant, were built by—or under supervision of—Hansen-Kashner Co., Fresno, Calif.

in addition to two clusters of silos and eight finished-product storage tanks. The six raw-material and clinker silos are 36 feet in diameter and 98 feet tall. The eight finished-storage tanks are 30 feet in diameter and 100 feet tall.

All of these tanks, with the exception of the Permanente finished-product silos, were built by or under the supervision of the Hansen-Kashner Co., Fresno, Calif., using air-operated jacks supplied by Pneumatic Jacks Inc., Tucson, Ariz. C. L. Hansen was in Hawaii throughout slip-forming operations on the two cement plants, giving the work his personal attention. Superintending the operations was W. L. Stevens.

Both these jobs, with a combined worth of about \$25 million, are scheduled for completion in 9 to 11 months

from the starting date.

#### Hawaiian Cement plant

The \$12 million plant of the Hawaiian Cement Co., designed by the Bechtel Engineers, is being built by a joint venture of the Hawaiian Dredging & Construction Co., Ltd., Honolulu, and the Bechtel Corp., San Francisco, with Ray Hemje as project manager. It is the second largest development in a huge new industrial park; ranking first is the \$40 million Standard Oil Co. refinery.

Only a few months ago, the dense, tangled growth of keawe trees on the beachland provided rugged conditions for the Navy's survival training maneuvers; today, the big sites have been bared by tractors with dozers and rippers for such new developments as the refinery, cement mill,

furnace steel mill, rolling mill for reinforcing bars, and a number of other industries.

One of the most complex operations at the Hawaiian Cement Co. plant was the building of the cluster of eight finished-product silos. The form for the tanks also included a man-lift shaft, a bucket-elevator housing, and the columns to support the ring girders for the bin bottoms.

The form was built up on double laminated segments cut from 2x8's and faced with 1x4 vertical grain flooring. Steel trusses attach to the top ring of the form and span across the tank openings. The timber jacking yokes attach the form to the jacks, which ride the 1-inch-round smooth jacking rods encased in the concrete.

The Pneumatic Jacks units have

14-inch diaphragms and are rated at 5 tons each. Using a double dog arrangement to climb the rods, these jacks can be adjusted to take from 1/4 to 3/8 inch per step. Each jack requires a cubic foot of air at 85 pounds pressure. On this particular form, the contractor used 102 jacks powered by a Worthington 125-cfm compressor.

Up to 30 of the jacks are connected to a single control valve. A bank of four valves with a common operating lever controlled the 102 jacks in this series. Each jack can be tripped individually to make adjustments for plumbing the silos and leveling the form.

An American Tubular double tower was used by the crew to hoist the concrete and serve as a man lift. The 1 1/2-yard tower bucket was filled directly from transit mixers. It dis-

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JULY, 1960

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## Cement salesmen needed

For some time, the cement used in the Hawaiian Islands has been imported from the mainland. The principal supplier has been the Permanente Cement Co., a Kaiser industry, which operates its own ships and barges that make regular trips to maintain the supply.

From time to time, investigations have been made as to the feasibility of manufacturing cement on the islands. During World War II, a small mill did actually operate there for a time, but its product was never really a success.

Suddenly this year, there are two large cement plants ready to go into production on the island of Oahu. A \$12 million plant with a capacity of a million barrels of cement annually has been built by the Hawaiian Cement Co. One of the owners of this new company is Walter F. Dillingham, chairman of the board of the Hawaiian Dredging & Construction Co., Hawaii's largest contractor.

A few miles away Kaiser's Permanente Cement Co. is building an \$11 million plant rated to produce 1.7 million barrels of cement annually.

It sounds as if Hawaii's cement problems should be over. But the prob-

lems of the cement plants may be just beginning. The strange fact is that either of the new plants can practically supply the islands' cement demands.

Adding to the irony of the situation is the rumor that neither of the new plants will produce cement meeting the standards for government work without importing admixtures that would materially increase the cost.

Exportation of any considerable volume of cement from the islands is restricted if the cement is not up to government standards, since Uncle Sam is one of the major customers in the Pacific Islands. Then, too, there is strong competition from Japan throughout the Pacific.

It looks like an opportunity for some good cement salesmen. At present Hawaii has practically no concrete roads. Many new and improved roads are needed, and this is certainly one possible use for some of the cement.

There is little lumbering on the islands, and imported lumber is expensive. It's likely that precast-concrete products—especially building blocks—will find an increased market. At any rate, it looks like no cement shortage for Hawaii as the battle between the two cement plants and their industrial backers continues beyond the construction stage.

(Continued from preceding page)

charged through a Y-shaped chute to two 1-yard Gar-Bro hoppers on the slip-form deck. Workmen wheeled the concrete out to the form in buggies. This pour required 2,700 cubic yards of concrete. On this, as on most other clusters, the form rose at a rate of about 13 inches per hour.

### Workmen learn quickly

One problem was the lack of workmen with any experience on slip forms. The native carpenters, however, were eager to learn and were good workers once they were trained. At the start, the contractor selected a group of workmen to operate the jacks. To demonstrate the jack operation, a supervisor took one of the jacks apart, explaining the function and operation of each part as he did so. This did not satisfy the workmen. They each took one of the jacks apart and reassembled it to be sure they understood it.

These men took pride in doing a good job and doing it quickly. On one of the Permanente tanks, the crew asked the contractor to let them do the complete 24-foot-high tank by themselves. Assuming a speed of about a foot an hour, the contractor refused, saying that this would in-



Two of the prestressed-concrete double tees have been picked off the roof of the ball-mill building at the Permanente plant to provide access for the Bay City crane setting structural steel. Advance planning paid off when the 2,000-hp 69,000-pound ball-mill motor arrived; it was simply unloaded from a truck and set on its foundation.

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Get full details on ALL CP Profit-Boosting Construction Equipment. See your distributor or write for Catalog 600 to: **Chicago Pneumatic Tool Co., 8 East 44th Street, New York 17, N. Y.**

**NEW CP-124**, an 80 lb. class Demo, packs more shattering punch per pound than any other Demo on the market. Perfectly balanced—handles like a lightweight tool. Has four-bolt backhead and shockproof retainer.

**G-900 TRACDRIL.** All-hydraulic drill positioning. Turret-mounting of boom permits 180° ground coverage with 17 ft. diam. for along-side drilling 33 inches beyond tracks. Toe holes at 25"; breast holes at 11ft. Wide, extra-long patented tracks increase stability and towing power. Dual controls at boom end and turret save steps, increase footage. "Dead-man" controls and automatic brakes keep drill from shifting, insure operator safety.





involve too much overtime. The men came back with an offer to work eight hours at regular time and then four hours of overtime. By then it would be the next day, so they could work another eight hours of regular time before starting on overtime again. To this, the contractor agreed. The 24-foot lift was completed by the one crew in 18 hours.

At the completion of each job, the contractor treated the crews to a Pu Pu—beer and sandwiches to you Malihinis.

On some of the silos, the columns and ring girders supporting the steel bin bottoms were placed as a separate operation. But on the cluster of eight finished-product silos, the columns were cast in the slip form integral with the tank walls.

To place the concrete inside the silos for the ring girders and the columns where required, the contractor rigged a rotating chute on a tower of Safway tubular steel scaffolding. Buckets of concrete were hoisted from sheaves in the roof of the silos and were drifted enough to clear the tower as they were raised. Then, as the buckets were dumped into the chute, the chute was rotated to distribute the concrete around the circumference of the tank.

In the cluster of finished-product silos, the operation was further complicated because the openings in the tanks were too small to admit a transit mixer. Here buckets of concrete were carried into the tanks on small mine cars traveling on rails. The placing operation was the same.

These same mine cars served to transfer the segments of the steel bin bottoms, as well as the gates and other equipment, into the several tanks through the small openings.

#### Dry-process plant

The Hawaiian Cement Co. plant is a dry-process plant; trucks running from nearby pits deliver raw materials that are crushed to minus ½ inch in a hammermill crusher and conveyed to a series of six raw-storage silos. Materials then go to the raw ball mill for pulverizing, and then to the homogenizing silos before being fed to the kiln.

As the clinker emerges from the kiln, it passes through a cooler and then to storage silos. The final processing step is the grinding of the

clinker in the finish ball mill. The cement passes to finished-storage silos and goes either to the packaging plant or directly into bulk transports.

Bunker fuel oil provides the heat for the kiln. The dust is removed from the flue gases in a big electrostatic precipitator. All of the plant elements are founded on mass concrete footings that bear on natural coral. This material has a bearing value of about 8 tons per square foot, but a design load of 4 tons was used. Concrete from the three local ready-mix plants was either chuted directly to the footings and bases or placed by crane and buckets.

#### Equipment preassembled

The contractor had some of the plant equipment fabricated in Honolulu by local plants. Other units were purchased on the mainland, and some elements were purchased abroad. Of the latter, the big kiln, furnished by F. L. Smidth Co., Copenhagen and New York, came from Denmark.

The belt conveyors were Hewitt-Robins rollers and drive units mounted on frames built by Hawaiian Dredging & Construction's Kapalama plant, and carrying Goodyear belts. Bucket elevators had Chain Belt shafts and chain with buckets made in Honolulu by Island Welding Co. The vibratory conveyors for the raw materials and clinker were supplied by the Jeffrey Mfg. Co., Columbus, Ohio. Crushers were supplied by Iowa Mfg. Co.

Another of the major elements of this plant's machinery includes the electrostatic precipitator, which was supplied by Western Precipitation Co., Calif. Most of the plant units are driven by General Electric motors with Western Gear drives.

Many of the larger mechanical units were preassembled on the ground and set in place by one of the big cranes. One of the highest lifts was made by a Manitowoc 3900 crawler in placing the dust-collector assembly atop the 135-foot-high storage silos.

Actual work on the plant got under way in October and by September, less than one year later, the plant

# PEQUIPMENT

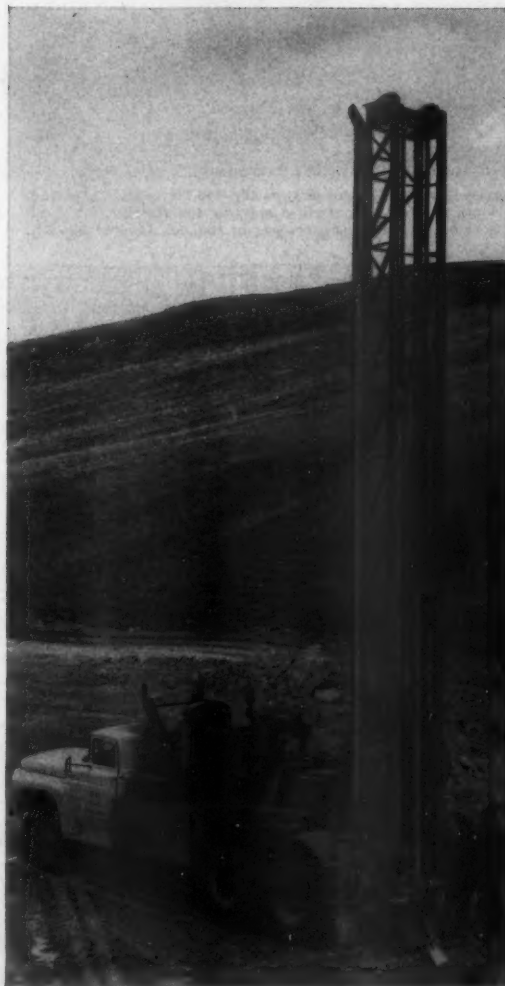
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360 TRUCK-MOUNTED REICHdrill, hydraulic, top-drive rotary, drills hole to 7½" diam.; down-pressure 30,000 lbs. Other models truck or crawler mounted; hole sizes to 16" diam.; down-pressures to 90,000 lbs.



Scheduling material delivery and handling of the many pieces of equipment that had to be shipped from the mainland was handled smoothly on the Permanente plant job. The Bucyrus-Erie 22-B crawler is unloading crated machinery from trailers.



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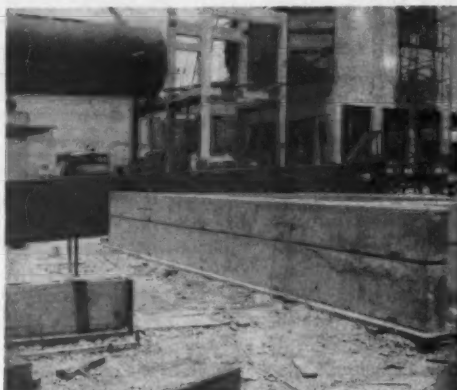
JULY, 1960

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## Operation at the Permanente Cement Co. plant



Near the 8 finished-product silos for the Permanente plant, a Lorain 35-ton truck crane with 100 feet of boom and 30 of jib sets steel for the scale house.



Columns, beams, slabs, and roof members for the feed building were cast at the site and set by cranes. Some of the members are in the foreground.



A Lorain erects equipment in the precipitator building. The 450-foot-long kiln, with the lining in place, represents 2,300 tons of rolling equipment.

(Continued from preceding page)

will be in production. Except on the slip forming, crews worked a 9-hour shift 5 days a week. This gave them an hour a day overtime and enough incentive to get them the 20 miles from Honolulu to the site. With the tremendous amount of construction under way on Oahu, there is some competition for good, skilled employees.

Project manager Ray Hemje had on his staff project engineer Jack Hussey, superintendents Ernie Morita on structures, Ralph Allen on equipment, and assistant superintendent Frank Paulson on utilities. Dave Johnson served as resident engineer for the Hawaiian Cement Co., and Howard Starke of Riverside Cement Co. served as technical adviser.

### Permanente cement plant

Construction of the big Hawaiian Permanente cement plant in less than 10 months probably set a record for this type of work, in spite of the fact that materials and practically all of the plant equipment had to be shipped by boat from the mainland. An exceptional job of planning and expediting is the obvious reason for getting the plant into production next month, some nine months after the start.

The expediting fell into two classes. One was the big job of gathering up all the materials and equipment and getting them to the islands and out to the job site. The other was the juggling of the construction operations, to be ready for the materials and equipment when they arrived and to avoid delays resulting from waiting for shipments.

The \$11 million facility, located at Nanakuli in leeward Oahu, will have a rated capacity of 1.7 million barrels of cement annually. It was designed and built for the Permanente Cement Co., a Kaiser Industry, by the Kaiser Engineers.

Kaiser Engineers planned to sub the entire job, providing only supervision at the site, but it ended up doing a large part of the work with its own forces. In the rush to get the plant under construction, there was insufficient time to prepare all of the work packages for efficient release to



Six-passenger capacity, plus pickup body—the Traveler® takes work crews and their equipment all in one trip. Comfortable, full-width rear seat has curbside door for easy in and out. Chassis and 6-ft.

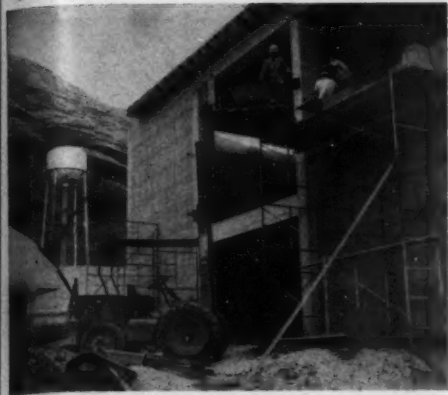
standard or Bonus-Load pickup body are factory matched and factory mounted. Traveler models handle gross loads up to 8,300 lbs. You get "dual versatility" for one price. Optional four-wheel drive.



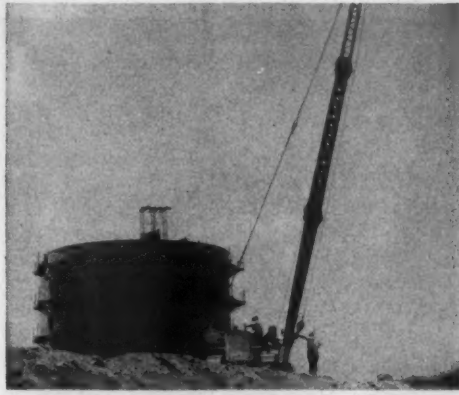
Tailor-made for hard work and heavy loads, INTERNATIONAL stake models have heavy-duty brakes and springs for long life on rough jobs. Wide cab seats three men comfortably. True-truck V-8 engines up to 197 hp. move loads faster, with welcome gas economy. Choice of regular or all-wheel drive, factory-installed stake bodies from 8 to 16 ft. long. Models up to 33,000 lbs. GVW.



## Operation at the Permanente Cement Co. plant



A Champ 200 high-lift fork truck raises mortar to workmen constructing walls of the mill building. The lift can raise materials as high as 30 feet.



Chicago Bridge & Iron Co., handling erection of a 500,000-gallon fuel-storage tank, uses a Cat D7 tractor with 75-foot side boom to do the job.



This Michigan 175A was kept busy moving materials and handling small grading operations at the plant throughout the construction period.



Matched and matched loads, big men around the job in an INTERNATIONAL pickup. Comfortable cab has 5 ft. wide seat, extra headroom. Choice of standard all-steel bodies (shown) or optional Bonus-Load bodies

up to 8 1/4-ft. long. 266 cu. in. V-8 engine gives outstanding gas mileage. Sweep-Around windshield has no "knee-skinning" doorway projections. Four-wheel drive available, too.

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subs. And for some portions of the work, qualified subcontractors were not available. As it worked out, Kaiser probably cut several months from the project schedule by doing a good share of the work.

A number of the items were sublet. The site grading and foundation preparation went to Oahu Construction Co., Honolulu. Slip forming of the 14 slurry and trachyte storage silos was sublet to Hansen-Kashner Co., and to Johnson-M-K, the latter a joint venture with headquarters in Seattle. This joint-venture contractor also built the elaborate administration building, gatehouse, and warehouse. The big precipitator was furnished and installed by Western Precipitator Co. The concrete roadways were paved by local subcontractors.

Among the many machines on the Hawaiian Permanente cement plant job during the nine months of construction were the following, some of which were owned or leased by subcontractors:

- a Bucyrus-Erie 54-B shovel crane
- a Bucyrus-Erie 22-B backhoe-crane
- a Link-Belt 30-ton motor crane
- a Bay City 30-ton motor crane
- a Lorain 35-ton motor crane
- a P&H 40-ton motor crane
- an Austin-Western hydraulic crane
- a Michigan 175A tractor shovel
- a Case 420 tractor with front shovel and rear hoe attachments
- a Gardner-Denver 600-cfm air compressor

Relatively few skilled tradesmen with experience in industrial construction were available at the start of the project, but with on-the-job training and close supervision, workmen learned rapidly.

Unions offered full cooperation from the start. A pre-job conference between the contractor and union officials defined jurisdictional limits and set up hiring practices in advance. This eliminated disputes and made it possible to expedite the work, particularly in the setting of plant equipment.

Expediting in other fields helped prevent delays: Negotiation with the Navy for use of the Iroquois Point

## Operation at the Hawaiian Cement plant



On the Hawaiian Cement Co. job is this Hough tractor shovel equipped with Drott 4-in-1 bucket. It is placing sand backfill in a tight spot.



A Gerlinger 5-ton fork truck unloads pallets of cement delivered by a low-bed trailer. This rig and a similar machine were constantly busy moving supplies.



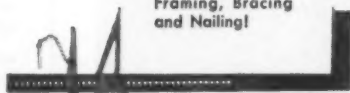
An International boom tractor loads a small mine car with material needed inside a finished-product silo. Cars are wheeled by hand to crews.

## Ellis BEAM-&-COLUMN CLAMP

SAVES ON FORMING LUMBER... FOR BEAMS, COLUMNS AND PILASTERS

An adjustable clamp, equally effective for beam, column, and pilaster forms! No change needed to go from one application to another. Attain great erection speed, save on materials, and re-use lumber more times... with dependable, money-saving Ellis Methods!

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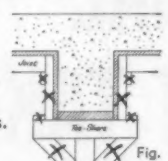


### BEAMS



(Photo, left:) Beam sides and bottoms of 3/4" plywood, held square together by Ellis Beam-and-Column Clamps, become a unit. Beam sides help to carry the load, permitting wider 3' spacing of shores. Lumber requirements reduced! (Fig. 1)

BIG SAVINGS OF LUMBER OVER OLD-FASHIONED WAY



### COLUMNS

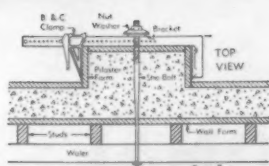
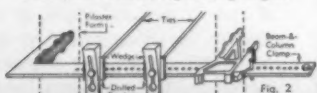


(Photo, right:) Column forms of plywood are erected with B.-&-C. Clamps on 2 sides... tying all 4 sides together as a unit. Photo also shows complete assembly of Shores, Purlins, and Joists



### PILASTERS

Pilaster forming was never so easy! B.-&-C. Clamps hold the sides square. Ties (see Fig. 2) or she-bolt (Fig. 3) go through L-brackets, forms, and walers. Tightening aligns.



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(Continued from preceding page)

dock at Pearl Harbor for unloading some heavy equipment lasted four months, but results justified the efforts.

Kaiser had one staff member on the job designated as expediter. He prepared a weekly report listing every incoming ship, together with a detailed list of material or equipment carried. He then worked with the shipping companies and local freight movers to get priority for the items that were needed first.

Job operations were scheduled to accept deliveries. When one of the 2,000-hp motors (weighing 69,000 pounds) arrived for the ball mill, foundations were ready, and the motor was set in place from the delivery truck.

#### Largest kiln

Among the biggest loads were the 50-ton sections of the kiln. Plates were rolled in Napa, Calif., by Kaiser and assembled into units 50 feet long and 12 to 15 feet in diameter. These were unloaded at Pearl Harbor by a big floating crane and transferred to a low-bed trailer for the haul to the plant.

Designed by F. L. Smidth & Co., the 450-foot-long kiln with a lining of refractory brick is a 2,300-ton unit of rolling equipment. Other plant elements are geared to the capacity of the kiln.

Coral is trucked to the plant from a pit a mile away. Trachyte, a native high-silica material, comes from another pit about 5 miles away. As coral is received, it goes through a primary jaw crusher and a hammer-mill to be reduced to minus 3/4-inch size before being conveyed to the raw-storage silos. The trachyte is reduced to minus 3/4 inch in a gyratory crusher before going to storage. Imported gypsum is stored in separate hoppers.

The trachyte is pulverized in a ball mill and stored in a special tank. It is then reground with the coral and fed to the slurry tanks beside the kiln-feed building. The slurry is fed into the oil-fired kiln to emerge as a clinker. After cooling, clinkers pass through a tunnel on vibratory conveyors to the bucket elevator that

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GROUND-JOINT FEMALE COUPLING, STYLE 16

so *Reliable* FOR PILE DRIVING

...AND ANY STEAM, AIR, WATER AND HYDRAULIC SERVICES... HIGH OR LOW PRESSURE

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Unequaled for safety, efficiency and long service life. Ground-joint union between stem and spud provides leak-proof, trouble-free seal... no lost or worn-out washers to replace. All parts malleable iron or steel, rustproofed. Furnished with superstrong "Boss" Offset and Interlocking Clamps. Sizes 1/4" to 6", inclusive.

### COMPANION MALE COUPLING

"BOSS" STYLE MX-16



Companion coupling for "GJ-Boss", described above, and "Boss" Washer Type Couplings Style W-16. Each size fits same size hose... overall hose not required. Furnished with "Boss" Offset and Interlocking Clamps. Sizes 1/4" to 6", inclusive.

### "BOSS" HOSE MENDER, STYLE BM-16



The practical, safe way to restore damaged hose to service. Fitting consists of corrugated mender tube and two "Boss" Interlocking Clamps. Tube has flanges to engage clamp fingers. Thoroughly rustproofed. Sizes 1/2" to 6"

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CONTRACTORS AND ENGINEERS





Raw-material silos 135 feet high are among the tallest at the plant. A Lorain raises parts for the conveyor leading to the crushing-screening plant.

115

## Manufacturers Memos



Scott R. Schleicher, left, vice president and general manager of the Marlow Pumps Division, Bell & Gossett Co., and Arthur F. Woods, vice president and general sales manager.

Scott R. Schleicher, general manager of the Marlow Pumps Division, Bell & Gossett Co., Midland Park, N. J., and Arthur F. Woods, general



sales manager, have been named vice presidents of the division.

Schleicher joined Marlow as an engineer in 1950. Later that year he was made production manager, and in 1958 became general manager. Woods came to the division in 1949 as a sales engineer. He became sales manager in 1954 and general sales manager in 1958.

Wheel Truening Tool Co., Detroit, Mich., has appointed Wendell E. Lloyd treasurer. Harold E. Robinson, president of the company for the last year, retained his previous post as treasurer until Lloyd's appointment.

J. A. Farnsworth is the new manager of the Mead-Morrison Division of McKiernan-Terry Corp., Harrison, N. J. He had been mid-Atlantic states sales engineer for the division, which manufactures bridges and towers for handling bulk materials; grab buckets, car dumpers, rail clamps, and related equipment.

Three regional managers for The White Motor Co., Cleveland, Ohio, have been made regional vice presidents. Charles S. Hale heads the north Atlantic region, covering New England, New York, and part of New Jersey. He will have headquarters in New York City.

Edward S. Hoke, located in Philadelphia, is in charge of the eastern region, which includes Pennsylvania,

Virginia, Maryland, Delaware, and parts of West Virginia and New Jersey. The southern region is headed by Robert F. Sharpe, from the Atlanta office. The area takes in Georgia, Mississippi, Kentucky, North and South Carolina, Alabama, Tennessee, Florida, and parts of Virginia.

The following officers of the Atlas Chalmers Mfg. Co., Milwaukee, Wis., have been re-elected: R. S. Stevenson, president; W. G. Schell, executive vice president; Boyd S. Oberlink, senior vice president; J. L. Singleton, senior vice president; W. A. Yost, Jr., vice president of staff operations. All directors were re-elected.

Four new directors have been elected at Clark Equipment Co., Buchanan, Mich. They are Robert E. Brooker, the president of Whirlpool Corp., and three Clark vice presidents: Clarence E. Killebrew, general manager of the company's construction machinery division, Walter R. Schirmer, president of Clark Equipment International, C.A., and John R. Wood, Jr., manager of Clark Equipment Credit Corp. and general manager of the company's over-the-highway trailer division.



Donald A. Metzger, general sales manager for the Florida Division of Food Machinery & Chemical Corp.

Donald A. Metzger has been named general sales manager for the Florida Division of Food Machinery & Chemical Corp., Lakeland, Fla. He will direct the sales of all products produced by the division, including steel casting forms for the prestressed-concrete industry, in an area extending from the eastern seaboard to the Rocky Mountains and including Canada, Puerto Rico, and the Caribbean.

The new treasurer of Bucyrus-Erie Co., South Milwaukee, Wis., is Jack A. Chantrey. He succeeds V. C. Stokley, who continues as vice president in charge of finance.

Two research associates of Universal Atlas Cement Division of U. S. Steel Corp., New York, N. Y., have been named, to fill newly created posts. Norman C. Ludwig is the new manager of manufacturing research in the Raw Materials and Manufacturing Division. He will work from the division's laboratories in Buffington (Gary), Ind. William V. Friedlaender was promoted to manager of products development and quality analyst, in the Quality and Technical Services Division in New York, N. Y.

James L. Woodley has been named manager of manufacturing for H. B. Williams Mfg. Co., Portland, Ore. From the headquarters office he will supervise manufacturing in all the company's plants. He will be succeeded as manager in the Danville, Ill., plant by William H. Kilkenny, formerly

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Solid and Center-Hole Rams  
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45

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Also Pole-Pulling, Reel, Timber, Cable & Wire Tensioning, Pipe Pushing & Pulling, Tie Hammer, Tie Replacer, and Siding & Flooring Jacks.



SINGLE ACTING RATCHET LOWERING

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GEARED JACKS

3 Models, 25 to 35 tons capacity. Side toe lift.



TRACK (TRIP) JACKS

13 Models (Five aluminum alloy) Single and double acting.

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Screw Jacks



SCREW JACKS 4-WAY HEAD—19 MODELS

10 to 24 tons capacity. Ball bearing, Malleable Housing, Safety peep hole.

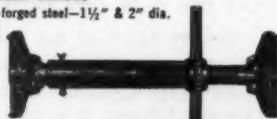


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## FOR A MAN-SIZED DRILLING JOB WILLIAMS AUGERS!

No longer is it necessary to send a boy to do a man-sized drilling job. Williams equipment has grown with the caisson foundation business and no job is too large.

Equipped with turntable base for quick spotting, outrigger jacks for easy levelling, power crowd for rapid penetration, trunnioned derrick for batter drilling, service hoist for tools and casing handling, the Williams earth boring machine is the most productive unit available.

**MODEL LDH**  
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part of Hyster retail operations in Los Angeles. Harold Berg, Los Angeles sales representative, succeeds McKenny.

**Economy Forms Corp.**, Des Moines, Iowa, has opened its first Canadian branch in Oshawa, Ont., under the name, **Economy Forms of Canada, Ltd.** The new company will distribute Efo steel forms and accessories for concrete construction. Sales offices are planned for Montreal, western Ontario, and other locations in Canada.

**R. J. Van Dame**, controller of Lincoln Electric Co., Cleveland, Ohio, has been elected to the company's board of directors. He has been controller in charge of general accounting since 1947.

**A. C. Grant** has been made general sales manager for **Buck Equipment Corp.**, Cincinnati, Ohio. He and his staff will coordinate the company's domestic and foreign sales.

#### Bruning opens new office in Michigan

A new district sales and service office has been opened in Grand Rapids, Mich., by the **Charles Bruning Co., Inc.**, Chicago. Russell J. Barry has been put in charge. Located at 3011 Madison Ave. S.E., the office will carry Bruning Copyflex, Paragon-Revolute, and Verifax copying machines, the sensitized papers used by the machines, and a comprehensive line of drafting equipment.

#### To Hyster overseas post

**Lonay Nelson** has been named chief engineer of Hyster Ltd., Glasgow, Scotland, a wholly owned subsidiary of Hyster Co., Portland, Ore. Nelson was formerly in the company's engineering department in Portland.

#### YOU CAN'T OUTGROW A ROLCOR ROLLER

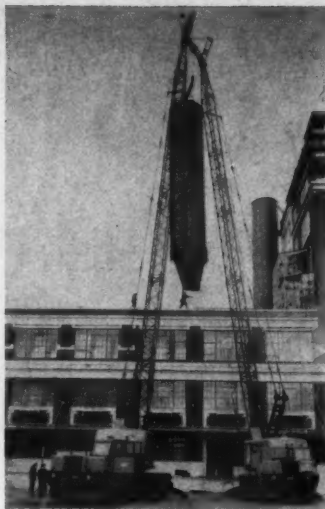


Here's a two-ton vibratory roller that produces compaction to equal or exceed static rollers weighing eight tons! Vibrapac is 100% American designed and built specifically for asphalt and soil compaction—no corrugation of surfaces. A single lever clutch shifts from static to vibratory action. Works in close places.

**ROSCO MANUFACTURING CO.**  
ROLCOR DIVISION  
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For more facts, circle No. 370

MAY, 1960



A GIANT FLOUR-STORAGE BIN, weighing 15,900 pounds, is suspended over the roof of a General Mills-Sperry Division plant at Spokane, Wash. Crane Service, Inc., of Spokane, was engaged to hoist 6 of these 57-foot tanks out to a 68-foot radius and up to the roof. The firm used its two matched Lorain MC-530W Moto-Cranes, each having a 35-ton capacity. They are mounted with Lorain Power-Set outriggers, of curved-beam design with attached floats for quick setup.

#### LeTourneau life story told in new book

In "Mover of Men and Mountains," the autobiography of R. G. LeTourneau, inventor and manufacturer of earthmoving machinery, the author tells how, after leaving school at 14, he learned the fundamentals of mechanical engineering while working at a succession of jobs. As an auto mechanic and later as a contractor, he invented and improved upon earthmovers that were forerunners of the giant machines he makes today. Throughout the book, LeTourneau describes the influence of religion on his business and personal life.

In addition to big scrapers—such as a 150-ton earthmover—LeTourneau machines include jungle crushers used to clear undeveloped foreign lands; off-shore drilling platforms; and numerous machines adapted for wartime use in combat areas. His most recent venture is a 560-foot overland train for the Army; this has 13 cars with a detachable front car that can double as earthmover, snowplow, or crane. LeTourneau was recently awarded the tenth annual award of the National Defense Transportation Association as the person whose "achievement contributed most to the effectiveness of the transportation industry in support of national security."

LeTourneau's world-wide activities include a foundation, financed by company profits and personal income, and devoted to religious and educational works.

Published by Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y., the book is priced at \$3.95.

During 1959, state highway-user tax receipts in the United States passed the \$5 billion mark for the first time. Motor-fuel taxes contributed the most, \$3,265 million. Motor-vehicle registration fees accounted for \$1,449 million, and other fees came to \$377 million.



## LOADING POWER means production power!

Production power means time and money saved. Rockford Spring Loaded Clutches are the perfect, controlled power-link between engine and work. These heavy duty clutches are used on many loaders, graders, and off-the-road trucks. Next time specify Rockford. Many sizes and types of clutches and power take-offs are available. Write today for complete details.



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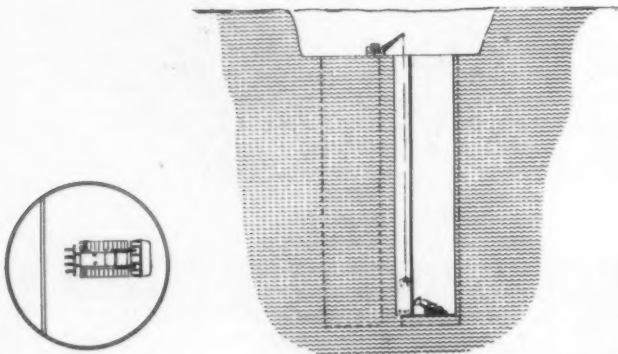
Excavation for an underground missile silo, 44 feet in diameter and 160 feet deep, is done with a front-end loader and crane. New methods allow the two to handle deep, confined excavation.

## Standard equipment makes good job of shaft excavation

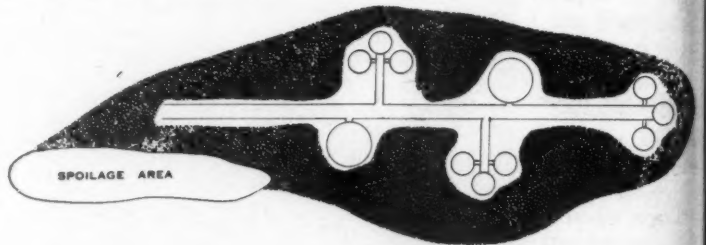
Construction of a missile base calls for plenty of deep shafts to be excavated, and this newest type of construction job is being well handled by standard rigs. Carving out space deep underground for missile silos, intercon tunnels, subsurface power plants and launching pads has brought out new capabilities in standard excavating equipment.

The company that built the first underground missile launching silo worked out techniques that formed a general pattern of operations for later projects. And some of the methods developed are adaptable to other excavating demands, such as the construction of underground parking lots or deep excavation in tight areas.

At one missile-base project, the job



A feature of the silo work is the number of deep, narrow excavations required. The 44-foot-diameter excavation is divided, as in the cutaway drawing, so that the clamshell never works above the front-end loader.



MODEL H10 (ABOVE)

Gasoline-powered unit especially designed for surfacing concrete highways, runways, streets, floors. Includes exclusive power takeoff for attaching "BERG" flexible shaft surfacing equipment.

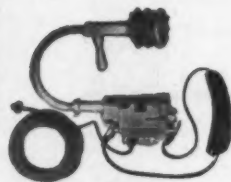
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Bridges, Highways,  
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Culvert, Floors, Walls.



MODEL A (ABOVE)

Lightweight, electric - powered unit that suspends from operator's shoulder. Equipped with interchangeable heads and attachments for surfacing bridges, buildings, dams, culvert, walls or similar surfaces.



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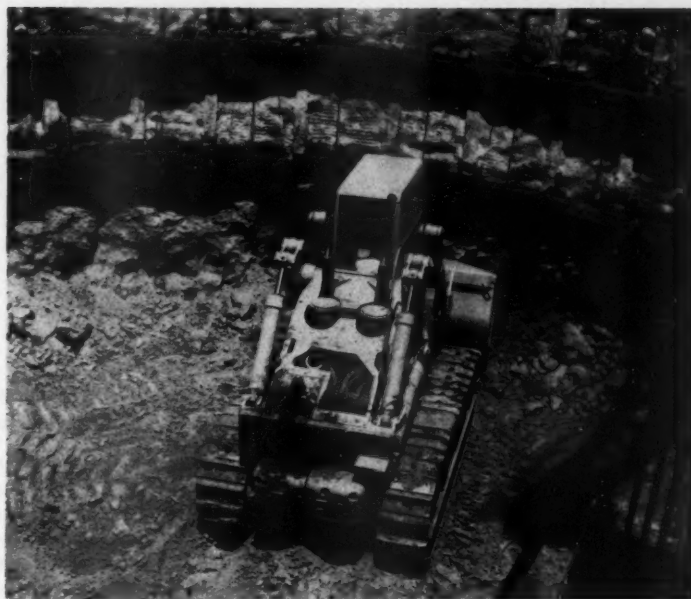
For more facts, circle No. 375

CONTRACTORS AND ENGINEERS





Digging itself down from the top of the silo, this Eimco 126 front-end loader scoops up loose material, then turns and dumps into a pile that can be reached by the clamshell which works on the other side of the divided shaft and hoists the material to the surface.



The walls of the silo are reinforced every 5 feet by a steel support ring. Between rings a steel-mesh screen is blocked back tight to the walls and covered with a heavy coat of quick-dry gunite before excavation continues.

consisted of sinking a group of silos, 44 feet in diameter, through decomposed sandstone and shale to a depth of 160 feet. No blasting was permitted. Steel had to be kept to within 5 feet of the bottom, and the walls gunited down even with the steel. Completion of the first silo was scheduled for 42 days from the date of the award.

The silo project had to be done so as not to interfere with the later construction of concrete-lined, steel-reinforced interconnecting passageways and supply centers. While the excavation was going on, concrete forms were being prefabricated, and, when the silos were finished, concrete crews moved in to construct the underground rooms and tunnels.

The construction of the missile base began with primary excavation down to the top line of the intercon tunnels. Tractors equipped with rippers began the work; then push tractors assisted in the loading of motor scrapers. The scrapers moved up prepared ramps into the spoil areas, which were lo-

cated so that the spoil could be easily graded, picked up, and transported as backfill. In this manner, the top 30 to 40 feet of the silo area was taken off before the actual shaft sinking started.

After the silo area was marked off, a Manitowoc clamshell was walked down to the silo location. The first steel ring was laid out flat on the ground, and the outside support steel was placed, leveled, and anchored into location. A new Eimco front-end loader was placed in the center of the steel ring. This was a Model 126 with a 205-hp GMC Detroit Diesel engine and an experimental ripper bucket with teeth mounted on the cutting edge. However, it was found that although this ripper succeeded in loosening the decomposed sandstone, the hydraulic hoses and fittings could not be reinforced to withstand the full tractive effort of the 52,000-pound loader. The teeth were removed from the bucket and a hydraulic-actuated ripper was mounted on the rear of the loader.

The excavation cycle started as the loader-ripper ripped the material loose and loaded it into the bucket. Then it turned and dumped into a pile so that the material could be picked up by a clamshell and hoisted to the surface. As the loader advanced, the bottom men trimmed the side walls with hand-held pneumatic spades.

When the loader reached the 5-foot mark, the loading operation was stopped and a steel support ring was

placed, bolted together, and centered. A steel-mesh screen was then placed between this steel support ring and the ground. The screen was blocked back tight to the side walls, and over it, filling all voids, was run a heavy coat of quick-dry gunite. After this, the loader-ripper resumed operations.

An up-to-the-minute safety program was followed to the letter. The clamshell was never allowed to operate over men working below. Even though it was hoisting at the same

## Combination WELDER/POWER/"TIGPAK" offers — 4 BIG ADVANTAGES



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"Manufacturers of the world's most complete line of arc welding equipment"

For more facts, use Request Card at page 18 and circle No. 376

## ALL-NEW HEAVY-DUTY BREAKER



From throttle to tool retainer, this 80 lb. class Worthington Blu-Brute paving breaker is all-new. It takes both spike and sheeting driver. And it's designed to give faster breaking with better operator control and less maintenance.

How? There's more than a dozen improved design features. They range from an easy operating progressive throttle valve to simplify starting moils through to a renewable front head bushing for low cost replacement of the wearing part of the chuck housing. Other features mean less operator fatigue . . . for example, the extended "steel run."

In addition, the WB-82 wears better because of the exclusive Worthington process: Blu-Coated parts.

The Blu-Brute paving breaker line is complete from the 20 through 80 lb. classes. See your nearest Worthington distributor for more information about the new WB-82. Or request bulletin from Worthington Corporation, Dept. 60-28, Holyoke, Massachusetts.



**WORTHINGTON**

For more facts, use Request Card at page 18 and circle No. 377

(Continued from preceding page)

time as the trimming, ripping, and loading were going on, what might have been a problem was solved by dividing the shaft.

Steel cross members were placed across one side of the circular shaft and a solid curtain of 2x12 planks was clamped to them. The cross members and the planking were so placed as to present a smooth, durable wall toward the outer edge of the shaft. This was the area through which the clam operated. The trimming, ripping, and loading moved steadily ahead in the open three-fourths of the shaft, and the only delay in hoisting came when the walls of the hoisting compartment were being trimmed.

The Eimco loader with the independent action of its crawlers was able to move in and, since the ripper projected well behind the operator, rip the material at the bottom of the divided section used by the clam.

Much of the silo excavation was finished ahead of schedule. Progress averaged 72 feet in a 6-day period, with an estimated 4,200 cubic yards of in-place material being handled.

The loader-ripper combination has been used before, but seldom in such tight shafts. Its use in conjunction with the clamshell in deep, confined excavations suggests cost-saving advantages for similar types of jobs.

THE END



A 1-mile haul at a rate of 25 mph is being made by this International Paymaster on a run from a 600,000-yard cut to a million-yard fill on Ohio 1 near Painesville. American Construction Co., Cleveland, is using six of the rigs on the grading phase of this 3½-mile project.

## PUNCH-LOK HOSE CLAMPS

chosen for **RUGGED DEPENDABILITY**



"Stays on for the LIFE of the hose!"

Fine power tools like the CHICAGO PNEUMATIC TORK-MASTER are dependable. That's why Punch-Lok hose clamps are chosen for coupling the hose!

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For more facts, use Request Card at page 18 and circle No. 378

## Mechanics of materials presented in new book

■ "Mechanics of Materials," by Archie Higdon, Edward H. Ohlsen, and William B. Stiles, is intended to give the reader a clear insight into the relations between stress and strain in a wide variety of conditions and materials. The book shows how to develop adequate procedures for finding the required dimensions of a member of a specified material to carry a given load, subject to stated specifications.

Principles and methods drawn from prerequisite study in mechanics, physics, and mathematics, together with basic concepts of the theory of elasticity and properties of engineering materials, are applied to problems. Major emphasis is placed on the elastic range of stress.

Copies, at \$7.75, may be obtained from the publisher, John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

## Film on safety measures in building construction

■ "The High-Low Bid," a 27-minute color movie on building-construction safety, has been released by Employers Mutuals of Wausau in cooperation with the General Contractors Association of Milwaukee.

The purpose of the film is to demonstrate that safety performance is important, since if accident controls are not firmly established, production costs can be so affected as to make job bidding no longer competitive.

Prints may also be purchased. Information may be obtained from Employers Mutuals' accident prevention department, Wausau, Wis.

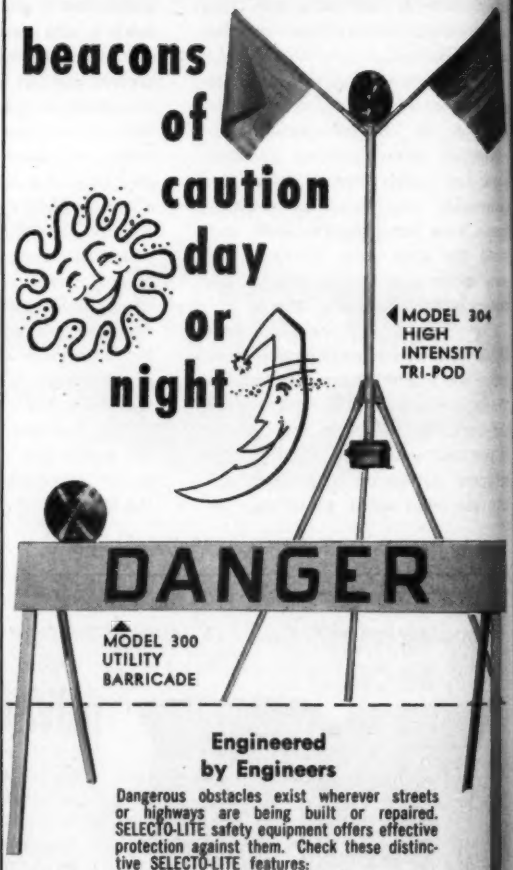
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1958 special-built "Spartan" office trailer triple axle 10-ft. wide and 45-ft. long. 100% air conditioned. Contains 4 spacious offices, toilet, lavatory and large closet. Trailer in excellent condition. Price when new: \$7,500; sell now for \$4,500.

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Dangerous obstacles exist wherever streets or highways are being built or repaired. SELECTO-LITE safety equipment offers effective protection against them. Check these distinctive SELECTO-LITE features:

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Contact the SELECTO-FLASH distributor in your area, or write direct for illustrated literature.



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CONTRACTORS AND ENGINEERS





An Allis-Chalmers TS-160 motor scraper works on a runoff waterway leading to a farm pond, while a Forty-Five motor grader grades the diversion terrace.

### Cut-and-fill terracing—new field for contractors

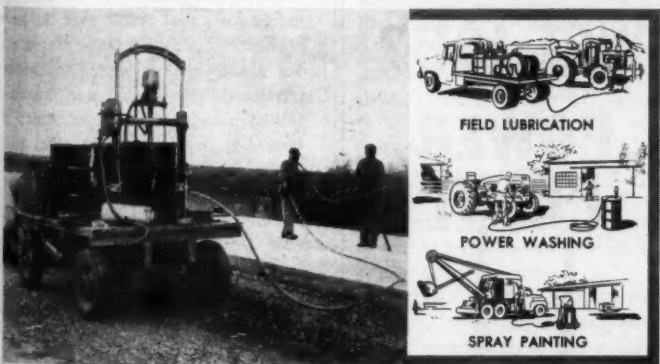
Unlimited opportunities in soil-conservation earthmoving were revealed to contractors attending a 3-day demonstration of the use of cut-and-fill techniques in building modern terrace systems, which took place this spring on a farm near Springfield, Ill. The demonstration was sponsored by the Sangamon County, Ill. Soil Conservation District, in cooperation with Illinois Road Equipment Co., an Allis-Chalmers construction-machinery dealer in Springfield. The pioneer project undertaken was a mile of diversion terrace involving about 2,300 to 2,500 cubic yards of earthmoving. Terraces parallel to this

key-line terrace were to be completed later; these will be spaced at 108-foot intervals. Land slope in the field averages 5 to 6 per cent. Charts showed that the 10-foot-wide terrace channel was graded to 0.4 foot per 100 linear feet, with seven grassed waterways installed to disperse runoff. One of the waterways is directed to an existing farm pond, which will be enlarged. Compaction caused by the heavy equipment is no real problem, according to Fred Tomlin, owner of the farm, who pointed out that good tillage would bring the soil density back to normal.

### Safety movie dramatizes results of carelessness

A movie has been produced to show that many of the accidents that happen to construction-equipment operators are the result of simple neglect. Making the point that it is often a single oversight that leads to tragedy, the 25-minute film, entitled "The Quota," presents several true cases

and shows why they happened. The film is available on loan from the Construction Machinery Division of Clark Equipment Co., Pipestone Plant, Benton Harbor, Mich., which produced the film in cooperation with the National Safety Council; or from Pilot Productions, Inc., Evanston, Ill.



Air operated pumps seal pavement joints

### AIR OPERATED PUMPS Clear the Way for Extra Profits

See for yourself... less expensive—lower installation cost—pump from original drums—infinite control of speed—seal material from dirt—completely empty drum... With these features Graco equipment gives you more work for less money even on the

toughest jobs. From the lightest to heaviest of materials there's a pump for every purpose... mastics, plastics, paint, chemicals. For complete information on pumping equipment that meets your needs... send us your requirements.

# GRACO

**GRAY COMPANY, INC.**  
747 Graco Square • Minneapolis 13, Minnesota  
(See phone book yellow pages "Lubricating Devices" for Graco Suppliers)

For more facts, use Request Card at page 18 and circle No. 380

MAY, 1960

THAT  
WONDERFUL  
65 FOOT

## Twelve Wide Marshfield Home

Line Drawing, Interior of  
12' x 65' Marshfield Home



- Easy to re-locate
- Less work to maintain
- Completely furnished permanent homes
- 10 ft. wide x 50 to 60 ft. long
- 12 ft. wide x 50 to 65 ft. long

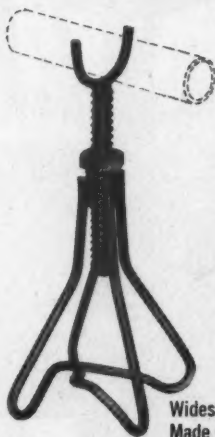
AMERICA'S BEST HOUSING VALUE

Write for address of nearest dealer  
**MARSHFIELD HOMES, INC.**  
Marshfield, Wisconsin

For more facts, use Request Card at page 18 and circle No. 381

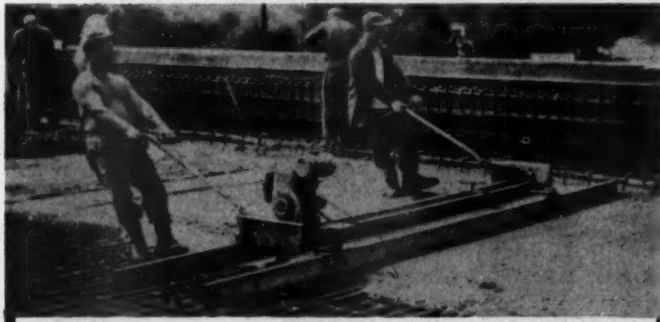
## Richmond Free-Fit Screed Bases

can be adjusted  
without turning cradlehead—available for  
 $\frac{1}{2}$ " and  $\frac{3}{4}$ " supporting units



- Designed to support pipe or T-bars without deflection under heavy loads.
- Screed Holder is re-useable.
- Can be adjusted for height simply by turning the Jam Nut.
- Free-Fit collar permits free passage of  $\frac{1}{2}$ " or  $\frac{3}{4}$ " cradlehead as needed.
- Essentially rugged, dependable supports able to withstand severe screeding action.
- Legs crossed for greater strength and to eliminate deflection.
- Curved leg ends provide for only four small points of contact.

Widest range of sizes for slabs up to approx. 2 feet.  
Made up on request for 2 feet or over.



SCREEDING BRIDGE DECK WITH VIBRATING SCREED



Hanger Frame Screeds are designed to do the two-fold job of supporting screed rails while holding hanging forms. Spans up to 42 feet have been screeded with these devices. Whatever the type or size, all Richmond screeding devices provide the extra strength that saves money and assures a better concreting job.

There are more than 400 items in the Richmond line of engineered form tying devices, anchorages, inserts and accessories... Richmond's 49 years of experience stand behind them and it will pay you to use them. Send for Richmond Bulletin No. 4 dealing with Adjustable Screed Chairs—and, if you have any specific concreting problems, ask us about them... we can help you. Write to:



Main Office: 816-838 LIBERTY AVENUE, BROOKLYN 8, N. Y.  
Plants & Sales Offices: Atlanta, Georgia; Fort Worth, Texas; St. Joseph, Missouri. In Canada: ACROW-RICHMOND LTD., Orangeville, Ontario.

For more facts, use Request Card at page 18 and circle No. 382

## Management

### Highways and Streets:

## Legal relations and responsibility to the public

This is the fifty-sixth of a series of articles on Construction Management by George E. Deatherage, P. E., The National Schools of Construction, Satsuma, Fla. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by George E. Deatherage & Son, Construction Consultants, Satsuma, Fla.



by GEORGE E. DEATHERAGE, P. E.  
construction consultant

Where SPECIFICATIONS  
call for . . . .



### BARCO RAMMERS are THE ANSWER!

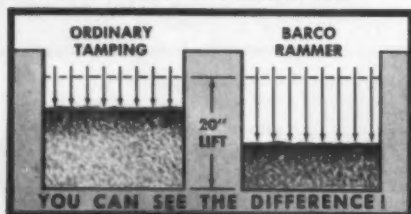
**YOU** can't get high degree SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

High degree soil compaction is worth every cent it costs. Barco Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches.

**ONE MAN OPERATION**—On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18" trench backfill, using lifts up to 24", the rate is 360 to 600 feet per hour.

**ASK FOR A DEMONSTRATION**—We will be glad to arrange a demonstration for you; see our nearest distributor or write.

SEND FOR A COPY OF CATALOG 621.

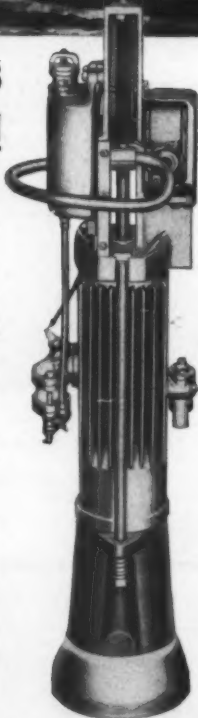


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**BARCO MANUFACTURING CO.**  
518H Hough Street • Barrington, Illinois

**BARCO RAMMER** for High Degree Soil Compaction  
**BARCO-VIBRA TAMP** for Granular Fill and Bituminous Surfacing

For more facts, use Request Card at page 18 and circle No. 383



Contractors working on roads and streets have to comply with many regulations and laws concerning paving or grading and the adjacent areas or property affected by the project.

First of all, there are federal, state, county, and city laws, ordinances, by-laws, or regulations covering those employed or materials being used. The contractor has to indemnify and save harmless the highway department and all its officers, agents, and employees against any claims or liability arising from violations of these laws and regulations.

Taking Florida as an illustration, a road contractor in this state must not only observe a wide variety of laws, but he must also procure all licenses and permits, pay all charges and fees, and give all notices required before the work can lawfully be done.

#### Patented devices, materials

Contract prices for grading or paving work include all royalties and costs involved in using any design, material, or process on the project. The right to use patented designs or materials is covered by a legal agreement with the patentee; a copy of the

agreement is filed with the engineer. But whether or not such agreement is made or filed, the contractor and the surety always indemnify and save harmless the department from all infringement claims.

#### Public convenience and safety

When a contractor is handling repairs or improvements on an existing road, the road cannot be closed, except when and where directed by the engineer. Whenever the road is not closed, the work must be done so that there is safe passage for traffic at all times.

When traffic has to be detoured by the highway department, the method, in general, will be indicated on the plans or in the special provisions. When a separate detour is to be constructed and paid for at unit or lump-sum prices, it is so indicated on the plans.

If it becomes necessary to divert traffic from the road or a bridge along the road, and no separate detour has been provided by the department, the contractor provides and maintains the detour, which must not be confined to one-way travel for more than a mile at any time. Such a detour is maintained either over or alongside the pavement area. If the engineer feels that traffic over the base or surface course would be damaging, the detour is provided alongside the pavement. The detour itself is maintained reasonably free of dust; if necessary, water or some other palliative is used to keep dust down.

Should the pavement be of concrete, the contractor constructs suitable temporary crossings over the pavement at points designated by the engineer. These crossings are maintained until the pavement is opened to traffic.

Vehicles and equipment used by the contractor are operated so that they do not constitute a hazard or hindrance to the traveling public. Adjacent premises are given access, as far as is practicable. Gutters and ditches are not left obstructed, and materials stored along the roadway are placed so that there is as little obstruction as possible for motorists. Fire hydrants on or near the roadway are kept accessible for fire fighting. No obstruction can be placed within 15 feet of a hydrant.

The expense of maintaining traffic, and of constructing, maintaining, and

### WET JOB? whether POWER PLANT



or other wet work —  
for "quick dry"...specify...

**GRIFFIN**  
**WELLPOINT CORP.**

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For more facts, circle No. 384



removing detours, temporary approaches, and crossings, is borne by the contractor, except in certain instances. If traffic is detoured by the department over other roads or streets, the contractor is not required to maintain such roads or streets. And where plans show a separate detour to be constructed and paid for at unit or lump-sum prices for the items of work involved, the cost of constructing and maintaining these detours is included in the contract prices for the pay items provided for detour construction.

The contractor is responsible for providing and maintaining all necessary barricades, warning lights or signals, and signs, and for having a

sufficient number of watchmen to direct traffic. Highways closed to traffic are protected by barricades and warning signs. Warning and directional signs are erected at all closures and along the detour routes. All barricades and obstructions must be illuminated at night.

When structures are erected over navigable waters, the contractor observes all regulations and instructions of federal and other authorities having control over such waters. Navigation channels are not to be obstructed without proper permission. The contractor provides and maintains the navigation lights and signals in accordance with federal requirements for the protection of the structure, the falsework, or navigation.

#### Explosives

Whenever explosives have to be used, it is the contractor's responsibility to make sure that life or property is not endangered. Whenever directed, the contractor limits the number and size of the charges. All explosives are securely stored, and the storage areas are marked clearly with "Dangerous—Explosives." A watchman is always on duty.

In carrying out work within or near state or national forests or parks, the contractor has to comply with all regulations governing protection of the area. This means keeping areas in an orderly condition, disposing of all refuse, obtaining permits for the construction and maintenance of camps, stores, warehouses, residences, etc., in accordance with the requirements of the forest or park official. The contractor is also expected to take all reasonable precautions to prevent forest fires and to fight them.

#### Preserving property

The contractor also has the responsibility of preserving all property along the line of work from being damaged. This includes public utilities, trees, crops, signs, fences, pipe and underground structures, and public highways. If any such property is damaged, the contractor has to restore it.

If any road outside the limits of the work is used for hauling materials or moving equipment, any damage caused is repaired by the contractor, and at his own expense.

If the contractor fails to repair damage, the engineer may, on 48 hours' notice, handle the work; the cost is then deducted from money due the contractor.

The contractor, however, is not prevented from receiving compensation for replacement of public or private property when its removal is required by alteration of grade or alignment and the work is authorized by the engineer.

The contractor is solely and directly responsible to owners of properties for any damage, injury, expense, loss, inconvenience, or delay, or for any suit or claims brought on account of these reasons. He indemnifies and saves harmless the road

## WE SELL OR RENT 65 DIFFERENT TYPES OF EASILY- ERECTED CONCRETE FORMS

Tell us your forming problem... We'll tell you how to handle it.

Phone, Wire or Write

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For more facts, circle No. 385

**JOE STINE / Heavy Duty**

**STIFFLEG DERRICKS... ANY SIZE**

Write for Bulletin 60-C

**TO MEET YOUR REQUIREMENTS**

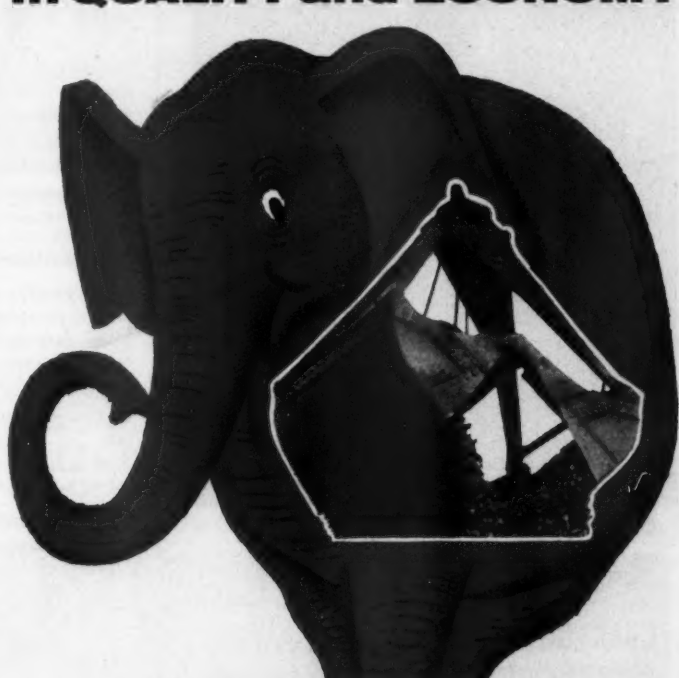
**JOE STINE, INC.**

P. O. BOX 14471  
HOUSTON 21, TEX. RI7-3600

For more facts, use Request Card at page 18 and circle No. 386

# BIG

In QUALITY and ECONOMY



# OWEN

OWEN clamshells are constructed with increased power and more durability foremost in mind. One of these features is the recessing of the top of each lip to receive the bowl plates. This gives the bucket a smooth interior and also relieves all stress and shear on the rivets that join the lips to the bowl plates. Recessed lips are standard on all OWEN buckets—and at no additional cost!

This is just one of the many reasons why OWEN Buckets are guaranteed pound for pound—size for size—to get a bigger load each bite—a larger output each day.

Write us your exact requirements. Remember, OWEN Engineers are at your service. Send for Free Catalog today.

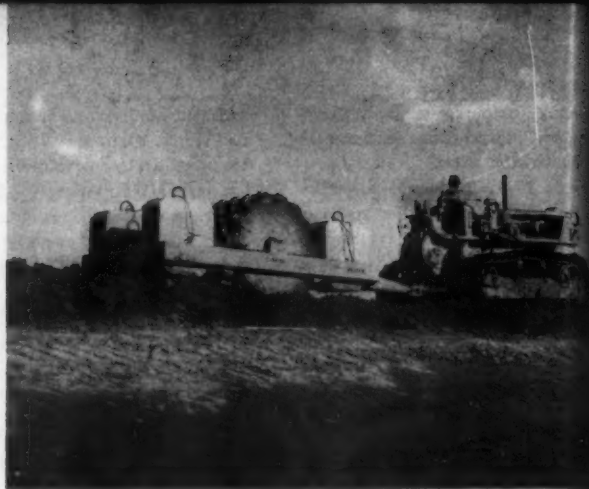
**The OWEN BUCKET Co.**  
BREAKWATER AVENUE, CLEVELAND 2, OHIO

BRANCHES: New York • Philadelphia • Chicago  
Berkeley, Calif. • Fort Lauderdale, Fla.

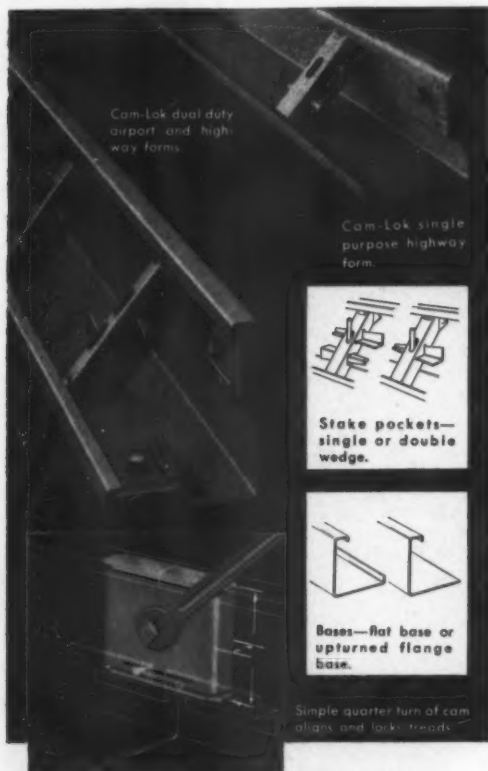
For more facts, use Request Card at page 18 and circle No. 387



Newly placed fill material is broken up and aerated by a Rome disk plow pulled by a Caterpillar D8 tractor during a phase of work involving the rerouting of Cedar Creek in Abilene, Texas, for the Abilene north bypass. The channel rerouting is being done by T. F. Hill, Abilene. Compaction of the fill material is handled



by this new Hyster tamping compactor towed by a D7. It is making the initial pass. The largest cut on this part of the project is some 5,000 feet in length and a maximum of 17 feet in depth. It contains 102,000 yards of material. Total earthmoving on the project comes to 834,000 yards.



Cam-Lok dual duty airport and highway forms.

Cam-Lok single purpose highway form.

Stake pockets—single or double wedge.

Bases—flat base or upturned flange base.

Simple quarter turn of cam aligns and locks heads.

## HELTZEL CAM-LOK FORMS SPEED HIGHWAY, AIRPORT CONSTRUCTION...

Heltzel Single and Dual Duty Cam-Lok airport and highway forms make form setting faster, easier.

With superior Heltzel cam-locking design sledging is unnecessary. A simple quarter turn of the cam draws treads and faces of both form sections into alignment—secure against vertical and horizontal thrusts under machine weights. Heavy Helcoloy  $\frac{1}{4}$ " steel-plate construction assures rigidity and long life.

Each Dual Duty Form is actually two form sizes in one—each can be used for two different slab thicknesses. One or two sizes may well handle all your paving form requirements.

Take advantage of Heltzel's specialized engineering facilities to help solve your equipment problems. Write for free Bulletins 59-3 and 59-12, or contact your nearby Heltzel distributor.



THE HELTZEL STEEL FORM & IRON CO.  
Warren, Ohio

For more facts, use Request Card at page 18 and circle No. 388

## management

(Continued from preceding page)

department and its personnel from all suits for damage or injury; money due the contractor may be retained by the state, and, if no money is due, the surety is held until the suit is settled. Money will not be withheld if the contractor produces evidence that he has adequate insurance coverage.

Payment of all just claims for materials, tools, labor, etc., is guaranteed by the contractor; his bond will not be released until these claims are paid or released.

### Workmen's compensation

Workmen's compensation insurance is provided by the contractor in accordance with the laws of the state. The amounts are sufficient to secure the benefits of the law for all employees and subcontractors' employees.

In addition to any other forms of



LESCHEN WIRE ROPE DIVISION  
N. K. PORTER COMPANY, INC.

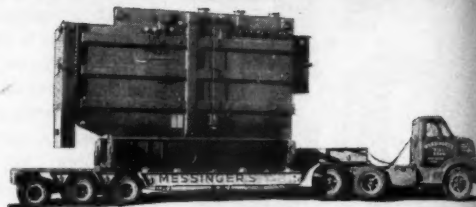
For more facts, circle No. 389

## TRANSPORT TRAILERS

OVER THE ROAD... ON THE JOB

**PROVED**

**RUGGED • DEPENDABLE**



### TRIPLE-AXLE MODEL GTX

Positive equalization and distribution of weight on each axle is assured through this exclusive design. Six dual wheels with capacity of 30 through 60 tons. Flat or drop deck. Axles are tubular in type with heavy duty heat-treated alloy steel spindles ground to size to fit heavy duty tapered bearings. All axles are of standard production and have camber for longer tire life.

**BUILT BETTER...  
TO LAST LONGER...  
TO GO FURTHER!**



#### MODEL GTRY

Triple-axle, with or without removable gooseneck. Capacity 20 through 100 tons.



#### MODEL XTT

Tandem axle tilt trailer (low type), capacities 13 through 20 tons.



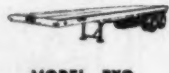
#### MODEL GPTX

Tandem axle. Capacities 18 through 40 tons. Drop deck or flat deck.



#### MODEL PTX

Heavy-duty tandem axle with adjustable bolsters. Telescopes from 16' to 30' from tractor.



#### MODEL FXO

Heavy-duty self-loading tandem axle oil field float.



#### MODEL GXTT

Gooseneck type, tandem axle tilt-trailer. Capacities 14 through 22 tons.

"TRANSPORTATION ENGINEERING A SPECIALTY"

TRANSPORT TRAILERS pledge to "design better units to convey heavier loads farther at the lowest operating cost, longer."



For more facts, use Request Card at page 18 and circle No. 390

CONTRACTORS AND ENGINEERS





Installing a gravel base, loading out excess material and backfilling for 9,000 linear feet of 8-inch sanitary sewer pipe in Lexington, Mass., were all handled by a Hough H-70 Payloader tractor shovel. Sewer and tunnel contractor N. Cibotti & Sons Co., Hyde Park, Mass., has the job.



Farm-to-market roads currently being built in Mexico are fast opening up dependable routes in the hinterlands. An Allis-Chalmers HD-16 is working on one of the roads in Veracruz, in eastern Mexico. Eighty per cent of these roads will be finished with gravel; the rest will be paved.

insurance or bonds required, the contractor has to provide insurance when the contract includes construction of a railroad overpass or underpass structure, or a railroad-crossing signal installation. This includes regular contractors' public-liability insurance providing not less than \$30,000 for damages arising out of bodily injuries to or the death of one person; a total limit of \$60,000 for covering injury or death to two or more persons in any one accident; insurance with a limit of not less than \$30,000 for damage or destruction of property in one accident and a limit of \$60,000 for property damaged or destroyed during the policy period. If any part of the work is sublet, insurance is provided by or in behalf of the subcontractors.

The contractor also provides evidence to the department that he carries in his own behalf public-liability and property-damage liability insurance in similar amounts covering operations performed for him by a subcontractor.

In behalf of the railroad company, the contractor provides protective public-liability insurance in the \$40,000 and \$60,000 amounts for bodily injury or death, and regular protective property-damage liability insurance providing for a limit of not less than \$50,000 for property damage or destruction in any one accident and \$100,000 for damage or destruction to property during the policy period.

At least seven days before operations are begun in the vicinity of the railroad, the contractor furnishes the department with two copies of each policy, which he carries for the protection of the railroad. One of these copies is forwarded to the railroad company by the department. All policies have to be acceptable to the department and the railroad.

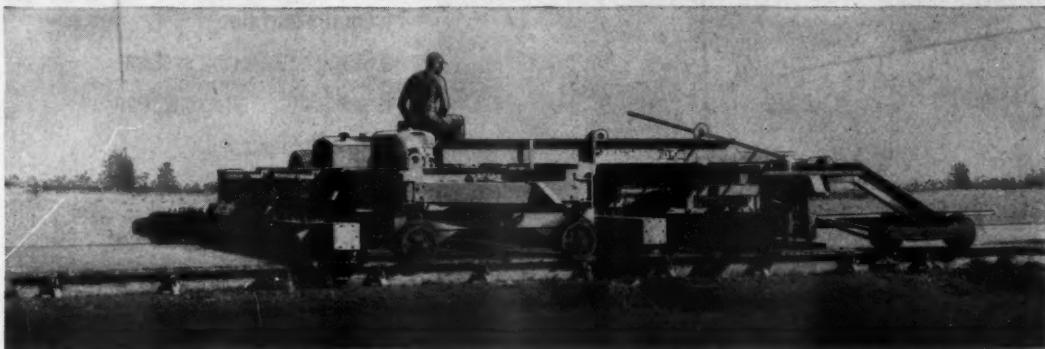
#### Responsibility for work

Until the department accepts the work, it is under the charge of the contractor. Any damage to any part of the work has to be repaired, without additional compensation, by the contractor.

The mere opening of a road is not held to be an acceptance of the work or any part of it, or as a waiver of any

(Continued on next page)

## NEW FLEX-PLANE FINISHER FLOAT



### Separate traction, screed drives for faster, finer finishing

The Flex-Plane Combination Finisher-Float Machine combines faster, smoother finishing at less cost with true over-the-road mobility.

The DC gas-electric drives, with infinite speed ranges (0 to maximum), power separate traction and screed drives. Operator can select desired ratio of screed speed to machine speed to compensate for any degree of slump. Each can be operated independent of the other. Finishing and floating become one operation with one operator—minimizes hand finishing. Float

section may be detached, permitting variable width finisher (12' to 26') to be used independently.

Built-in highway transport wheels (optional) on both finisher and float units are controlled hydraulically from central control panel of finisher section, allowing each unit to be towed from job to job quickly, easily.

Write today for free Bulletin 59-5, or contact your nearby Heltzel distributor.



**THE HELTZEL STEEL FORM & IRON COMPANY**

Flex-Plane Division • Warren, Ohio

For more facts, use Request Card at page 18 and circle No. 391

# 3

WHEEL

AND

## TANDEM

## ROLLERS

INGRAM 12 ton 3-wheel roller rolls hot coarse grade asphalt directly behind bituminous paver on North Loop 13, San Antonio, Texas.

INGRAM 8-12 ton tandem roller works in background.

Both rollers feature REVERS-O-MATIC Drive.

**Acme**  
**IRON WORKS**

CULEBRA AVE. AT EXPRESSWAY N. W.  
P.O. BOX 3028 • SAN ANTONIO 5, TEXAS

AVAILABLE IN ALL SIZES

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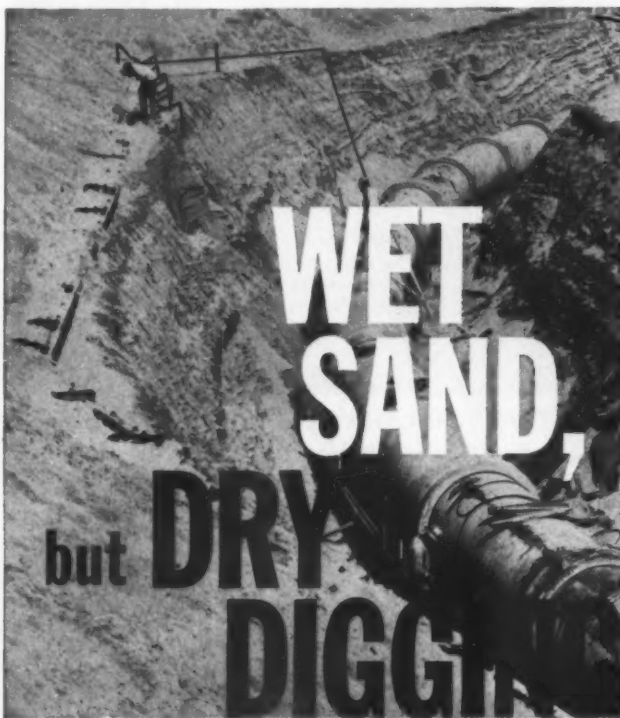
## Construction Camera



Carpenters set a bottom for a concourse beam, and will erect Symons panels to form its sides, at the \$4 million Salt Lake City Municipal Air Terminal Building. The Symons system is being used for the 90,000 square feet of forming needed. Symons forms were used for all parts of the building.



A section of steel pipe, weighing 12 tons and measuring 60 inches in diameter, is handled by a Manitowoc Model 2900 truck crane working on the new \$8 million water line for the Metropolitan Water District of Southern California. Vido Artukovich & Son, Inc., El Monte, has the contract.



For more facts, use Request Card at page 18 and circle No. 393

### JUST A FEW YARDS

from the surf line,  
a Stang dewatering system  
is predraining an excavation  
area of beach sand.  
Note the steep angle  
and stability of  
the slopes.

In any terrain,  
with any water handling  
problem, it will pay  
you to contact Stang—  
plan to on your  
next job.

### JOHN W. STANG CORPORATION

Engineers and Manufacturers of Dewatering Equipment  
8221 Atlantic Avenue, Bell, Calif.  
Omaha • Tulsa • Minneapolis • St. Petersburg  
Mobile • Tacoma

## management

(Continued from preceding page)

of the provisions of the specifications and contract.

The department has the right, on discovery of error in partial or final estimates, or proof of defective work or materials, to claim from the contractor or his surety enough money to make good the work. This holds true even after final payment.

### Wage rates on contracts

A Florida statute requiring contractors to pay certain wages on specific contracts is made a part of the specifications.

Construction, repair, or maintenance of bridges and roads amounting to a contract price of more than \$50,000, or more than \$5,000 in a large metropolitan area, calls for the contractor to pay not less than the prevailing wage rate for all laborers, mechanics, and apprentices.

### Consignment of materials

The contractor can have materials that will become a permanent part of the work consigned to the Florida State Road Department, in his care. However, this does not cover equipment; forms and supplies; or shipment of materials from a producer to a processor, fabricator, or dealer. The contractor, if requested, furnishes the department with one copy of each paid freight bill for transportation of materials consigned to the department. But if the contractor fails to settle all freight bills and demurrage charges on materials consigned to the department, this privilege may be revoked.

(Next month's article will deal with "Highways and Streets: Subletting contracts.")

### Beaver-Advance assigns

■ Leo B. Manning has been named western district manager of Beaver-Advance Corp., Ellwood City, Pa. He succeeds R. Bruce Angell, who is entering the construction-equipment distribution field in Honolulu.

Manning will be responsible for distribution of the company's building-construction equipment in 8 states, from San Carlos, Calif., headquarters.

CONTRACTORS AND ENGINEERS

## SPEED SENSITIVE SWITCHES

1, 2 & 3 ELEMENT

### OVERSPEED

One S.P.D.T. switch to trip at speeds between 500 and 6,000 RPM.

### OVER AND UNDERSPEEDS

Two S.P.D.T. switches to trip at two different speeds between 300 and 6,000 RPM.

### UNDERSPEED

One S.P.D.T. switch to trip at speeds as low as 250 RPM. Maximum operating speed 5,000 RPM.

### OVER INTERMEDIATE AND UNDERSPEED

Three S.P.D.T. switches to trip at three different speeds between 350 and 6,000 RPM.

### EXPLOSION PROOF AVAILABLE

The switches listed above are available with explosion proof containers that meet all of the specifications of Class I, Group D, explosion proof equipment.

For further information ask for Bulletin 504 and 504 A.

**SYNCHRO-START PRODUCTS, INC.**  
8151 N. RIDGEWAY AVENUE, SKOKIE, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 394

## BURCH



### Force Feed SPREADER

For uniform deposit of material. The nationally known chip and stone spreader with the exclusive Burch dual feed gate for material depth control.

The standard tool for heavy matting and seal coating, forward or backward spreading.

Write today — ask for the complete data.

**The BURCH Corp.**  
CRESTLINE, OHIO, U.S.A.

■■■■■■■■■■ RETURN THIS COUPON ■■■■■■■■■■

Please send complete information on the Burch Force Feed Spreader.

Name \_\_\_\_\_ Title \_\_\_\_\_  
Firm \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

For more facts, use coupon or circle No. 395





A 3-million-yard earthmoving job on a 3.8-mile contract for widening of the Calumet-Sag Channel near Chicago is handled by a Bucyrus-Erie shovel and a fleet of Payhaulers. Contracting & Material Co., Evanston, and Kenny Construction Co., Skokie, Ill., are handling the job as a joint venture.



Earthmoving at a rate of 60,000 to 70,000 yards daily is the schedule set up for the 5-million-yard job for a jet runway at Nashville City Airport in Tennessee. Lubrication, done with Gulf products, is handled so that no time is lost by the fleet of Cat equipment handling the work.

## Need HOSE in a HURRY?

**Suction • Water • Steam  
Air • Multi-Purpose  
Discharge • Pile Driver**

Wherever your job is—whenever you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—when and where you want it.

There's no need to wait for distant shipments—no need to stop the job—no need to lose profits.

Any time you need hose call Continental. You'll like the fast service and dependable quality you get from these warehouses:

BALTIMORE, Md.	CLEVELAND, Ohio
BOSTON, Mass.	DETROIT, Mich.
CHICAGO, Ill.	MEMPHIS, Tenn.
	PHILADELPHIA, Pa.
	ST. LOUIS, Mo.



### CONTINENTAL DISCHARGE HOSE

Excellent for open end pump work, this hose has durable rubber tube reinforced with four plies of quality fabric. Tough rubber cover withstands rough use and abrasion. Sizes: 1", 1 1/2", 2", 2 1/2", 3", 4". Ask for catalog showing complete line of CONTRACTORS HOSE, HOSE FITTINGS, BOOTS and WATERPROOF CLOTHING.

**HOSE by CONTINENTAL**

CONTINENTAL RUBBER WORKS • 1989 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

For more facts, use Request Card at page 18 and circle No. 396

### Chicago manager for Leschen Wire Rope

Richard K. Teske has been appointed Chicago district manager for the Leschen Wire Rope Division, H. K. Porter Co., Inc., St. Louis, Mo. Teske, formerly Michigan territory salesman for Leschen, will direct sales of the division's products in Indiana, Michigan, Wisconsin, Minnesota, North Dakota, and parts of Illinois, Iowa, Ohio, and Kentucky.

### Kelly & Gruzen names three as associates

Kelly & Gruzen, New York, N. Y., architects and engineers, has made three staff members associates of the firm. Robert B. Middlebrook was named associate in charge of the design department; John H. St. Germain was put in charge of institutional, hospital, and prison work; and Arthur Klein, legal and financial adviser to the firm, was appointed comptroller and business manager.



## Make yourself HEARD! ... without Screaming your lungs out.

Just speak in a normal voice . . . and let your compact, lightweight, "one-piece" Audio HAILER do the work! New "TP" (transistor-powered) model projects your words . . . like a harpoon—in a commanding "beam" . . . to anyone within a half-mile radius.

Yet Hailer is completely self-contained . . . NO external connections whatever . . . weighs only 5 1/2 lbs. . . and runs on low-cost standard flashlight cells. Coupon below brings full details and price list.

### AUDIO HAILER

The original power megaphone, and most widely used "one-piece" portable voice system on earth. Weatherproof finish in two-tone green or fire engine red.



**AUDIO HAILER**  
transistor-powered  
PORTABLE MEGAPHONE



**SUPER-HAILER**  
To penetrate through severe adverse noise levels . . . new SUPER-Hailer concentrates a 16-watt "sound beam" to pierce the surrounding roar. Mile range in quiet conditions.

AUDIO EQUIPMENT CO., INC.  
Port Washington 40, N. Y.

- ☐ Send color brochure and price list, describing "TP" Audio Hailer.
- ☐ Send details of "TP" Super-Hailer.

Name \_\_\_\_\_  
Company or Dept. \_\_\_\_\_  
St. & No. \_\_\_\_\_  
City \_\_\_\_\_ Zone No. \_\_\_\_\_ State \_\_\_\_\_  
(if any)

For more facts, use coupon or circle No. 398



## FARRELL-CHEEK SHEAVES and Wire Rope Fittings

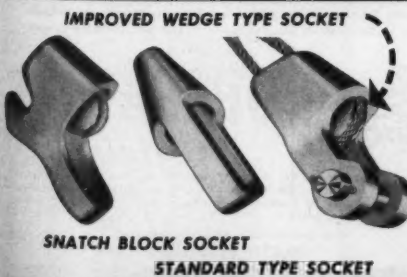
Cast Steel and 50 years of know-how in using it account for the superiority of Farrell-Cheek sheaves and wire rope fittings. Actual service in the field readily confirms all claims.



Cable Saver  
Grooves

Sheaves with Cable Saver Grooves and unmatched resistance to fatigue and wear ★ Choker Hooks of great strength and utility ★ Standard, Wedge Type and Snatch Block Sockets of many performance features ★ Clips, Thimbles and Eye Hooks . . . all electric furnace cast from Farrell-Cheek carbon and F85 alloy steels.

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**FARRELL-CHEEK STEEL CO.**  
103 LANE STREET, SANDUSKY, OHIO

Finest Name in Cast Steel!

For more facts, use Request Card at page 18 and circle No. 397



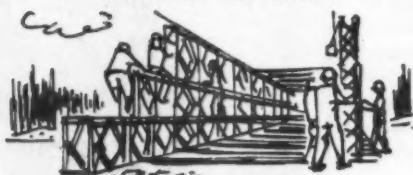
A tough mix of 60 per cent gravel and 40 per cent sand and Georgia red clay is handled by a Pioneer 425 stabilizer plant and 60-foot X 36-inch Pioneer portable conveyor for soil-cement work on a road near Cartersville, Ga. Though mixing was rough, there was no lost time. Production hit 500 tph.



Filling the bill both for work on small erosion dams and loading a portable batch plant for bridge concrete in Oklahoma is an International 340 batch plant. The scraper handles the work before dams are built and does final grade work and cleanup.

## WHEN TIME COUNTS — Look to BAILEY BRIDGING

FOR FAST ERECTION



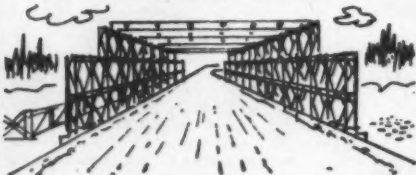
Unskilled labour can quickly assemble the standard bridging components. Bailey Bridging is the ideal answer for emergency or rush schedules to provide temporary or permanent bridging.

### QUICK LAUNCHING



Using a simple cantilever system, the bridge is quickly moved across the river. Can be decked with timber supplied locally or with special steel decking.

### AND CLOSING THE GAP!



In record time — a bridge like this appears and immediately begins to carry traffic across former barrier. Such an economical method of spanning rivers, valleys and gorges is a major factor in opening remote territory for the tourist, mining and lumbering industries.

Every Part Fully Guaranteed

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Sole Distributors for Bailey Bridging in Canada and U.S.A.  
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### U. S. REPRESENTATIVES

Timberland Machine Inc.	Mason and Mason Inc.	Bailey Bridge Equipment Co.
25 Park Street	McClure Building	1767 Condo Avenue
Leicester, New Hampshire	Frankfort, Kentucky	San Luis Obispo, California

For more facts, use Request Card at page 18 and circle No. 399

## Booklet shows erection of skyscraper steelwork

■ The erection of the steelwork for the Chase Manhattan Bank Building in New York City has been described in a booklet of color and black-and-white photographs, published by Bethlehem Steel Co., Bethlehem, Pa. The story begins with the planning stages and ends with the topping out of the last steel member.

Bethlehem supplied, fabricated, and erected the 53,000 tons of steelwork used in the building, rooted 90 feet below street level and rising 813 feet into the air. The booklet, entitled "60 Stories of Steel," may be obtained by writing to the Publications Dept., Bethlehem Steel Co., Bethlehem, Pa.

## Slide film features Clark fork trucks

■ Ranger fork-lift trucks, of 4,000 and 6,000-pound capacity, star in a sound and color slide film produced by the Industrial Truck Division of Clark Equipment Co., Battle Creek, Mich. The 20-minute film, entitled "Anything, Any Place, Any Time," shows the uses and advantages of the 4-wheel-drive trucks, and how they can negotiate difficult construction terrain.

The film is available for free showing by writing Slide Film Department, Industrial Truck Division, Clark Equipment Co., Battle Creek, Mich.

## Nevada highway map for 1960 is offered

■ The 1960 edition of Nevada's official state highway map is now available. The 4-color map, featuring nine full-color scenic photos, shows for the first time completed sections of Interstate 80 (U. S. 40) across northern Nevada and Interstate 15 (U. S. 91) through the southern tip of the state.

Copies of the road guide may be obtained by organizations and individuals by writing to the Nevada Department of Highways in Carson City. Supplies are also available through highway division offices, chambers of commerce, travel agencies, and auto associations.

## MOBILE OFFICE UNITS...



Save TIME... and MONEY!!!

MOBILE OFFICE Units are low in cost... Built to your specifications... There's a unit to fill your every need.

Because MOBILE OFFICE Units are easy to move from job to job, they enable you to have office, engineering, paymaster and other facilities at every point of your operation.

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7314 Stony Island Avenue, Chicago 49, Illinois  
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## Attention CONTRACTORS



The Greer School will train your men to operate or service all types of heavy equipment. Training conducted on hundreds of acres of land set aside for this purpose to simulate actual operating conditions. Our placement department can also provide men you need. Write for information and tuition rates.

## MECHANICS training



The Greer heavy equipment training shops provide highly practical instruction covering every step in maintenance and service of all types of current equipment. Training includes gasoline and diesel engine work and hydraulic systems. Students work on actual equipment in addition to classroom training.



## OPERATORS training

Greer heavy equipment operator course graduates are ready to step into any job in the field. Practical classroom training on theory and operation is supplemented with hundreds of hours of operating every type of road building, earth moving and construction equipment.

For information write to Registrar  
EARTH MOVING DIVISION



Greer TECHNICAL INSTITUTE  
BOX 278, Braidwood, Ill.

For more facts, use Request Card at page 18 and circle No. 401

CONTRACTORS AND ENGINEERS





Lightweight concrete, made with Permalite expanded perlite concrete aggregate, is pumped to the Corruform roof-deck installation for the 6-story Dixon-Ives department store in Orlando, Fla. Pumping the fireproof, insulating roof fill into place cut down on cost of labor and speeded concrete transport to the roof.



Excavation of a trench for a tie-in of lateral lines for the Bexar Metropolitan Water District's 6-inch fresh-water supply line in San Antonio, Texas, is being done by a Minneapolis-Moline tractor with backhoe and loader. The rig loads excess dirt into trucks and backfills the completed line.

## SWENSON the Summer- Winter Spreader...



U. S. Army Photograph

### for resurfacing and ice control

Spread sand, gravel, salt, calcium chloride, cinders or any combination of these materials. Clutch-controlled from cab of truck. Any desired rate-of-flow. Steady or intermittent up to 30 M.P.H. Narrow strips or full traffic lanes. Forward or reverse. Models to fit any dump-truck box. Chain or hydraulic drive. Speed summer construction jobs, dust control, soil stabilization. Handle winter ice-control problems faster, safer, more efficiently. Write for complete information.



SWENSON SPREADER  
LINDENWOOD, ILLINOIS

For more facts, circle No. 402

### AGC releases film of panel discussion

Five highway authorities discuss such topics as highway needs and benefits, construction costs, financing, and the current Congressional investigation of the federal highway program in a 28½-minute, 16-mm sound film produced by The Associated General Contractors of America. At AGC's 1960 convention held in San Francisco, a panel discussion of the five men was recorded on film; it has been edited to retain the highlights.

"The Highway Program: Today and Tomorrow" presents John A. Volpe, president of the AGC and former Federal Highway Administrator, as moderator. Other participants are

Rep. Gordon H. Scherer (R. Ohio), ranking minority member of the House Subcommittee on Roads; Federal Highway Administrator Bertram D. Tallamy; A. E. Johnson, executive secretary of the American Association of State Highway Officials; and state senator Randolph Collier of California.

For showings to civic or other public groups, there is no charge for the film, available through the public relations department of the AGC, 1957 E St. N. W., Washington 6, D. C., or through chapters of the group in various cities. Organizations or firms may buy copies of the film at \$75 each, or rent it at \$10 a week.

### Perlite Institute names public relations director

Perlite Institute, Inc., the international association of perlite processors and miners, has appointed R. Joseph Kuklich as director of pro-

motion and public relations. Kuklich has served the building-products field in advertising, promotion, and sales posts.



Next time get  
**LESCHEN**  
Wire Rope

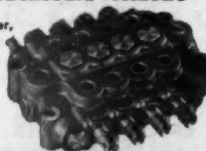
LESCHEN WIRE ROPE DIVISION  
H. K. PORTER COMPANY, INC.

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HUSCO 4-Plunger,  
45 G.P.M.  
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Valve



- In ONE to SIX Plunger Designs
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#### Other HUSCO features include:

- Power-Saving Pilot-Operated Relief Valve.
- Short Plunger Movement for more accurate control—at minimum effort.
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- Over 120 Standard Models—for unlimited modification to your needs.

Check HUSCO First for Hydraulic Control. Write for your copy of HUSCO'S "House of Ideas in Control Engineering"—or design assistance on your needs.



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NU AERO  
SPRAY LUBE  
For all  
GEARS not  
running in oil.  
Easy applica-  
tion of heavy-  
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Eliminates gear  
wear, protects your  
machinery. No  
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1 Doz. 18 oz. cans  
\$18.90 per case



NU AERO CHAIN AND CABLE LUBRICANT (Heavy Duty)—Gives increased life to all chain drives and wire ropes. Penetrates, lubricates and protects from rust. Contains graphite and additives to give long-term lubrication after oil has dried out.  
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NU AERO PRODUCTS:

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—CASES PENETRATING OIL @ \$12.90 EACH

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I will receive a free Roe steel tape with order.

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## The Campbell Sliding Cab - - - for models HU, HH, HO, H3OR, H50, H70, and H90 "Payloaders"!!!



This sturdy, modern design offers features long desired by "PAYLOADER" operators, among them—Sliding top, ball bearing mounted on steel channel—Rubber seals to insure weather tightness—Permanently mounted access ladder—Rear view mirror—Tinted safety glass windshield and skylight.

Investigate this completely new design in "Payloaders" Cabs by calling your "Payloaders" distributor, or contact

**CAMPBELL DETACHABLE CAB CO.**  
WAUCONDA, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 406

## Precast stone units screen embassy building

A derrick boom on an upper floor of the U. S. Mission to the United Nations building in New York City lifts and positions white cast-stone frames that will screen the glass curtain wall of the structure.



A lacework of white cast stone frames a series of hexagonal frames for a glass curtain wall is a unique feature of the structure for the U. S. Mission to the United Nations, which is under construction across the street from the U. N. General Assembly building in New York. The new embassy building will be the only New York City structure with an over-all "honeycomb" screen.

The 12-inch overhang of the developing cast-stone frames was introduced to provide natural light and sun control, as well as an unusual esthetic effect. The building, completely air-conditioned, will have floor-to-ceiling glass on all floors.

### Frames precast

Each frame, precast with quartz aggregate, measures 11 feet 9 inches in height, 3 feet in width, 1 foot 11 inches in depth, and weighs about 1,200 pounds. Frames are permanently fastened to the structural frame of the building by bolting cross angles—previously affixed to the cast stone during precasting—to steel 11-inch WF 31-pound beams welded to the spandrel beams at each floor. Richmond screw anchors and bolts were used to fasten the cross angles to the frames. Screw anchors were

(Continued on page 132)

## MOVES with the JOB! NO CONCRETE PITS!



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CAPACITIES: 20 to 32 tons  
DECK LENGTHS: 18 to 43 ft.

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Sets up in minutes...accurate, precision weighing *on-the-site*. Complete steel deck construction. Low original cost...no maintenance costs. Can be installed as a pitless scale. Saves pit costs. WRITE OR WIRE FOR BULLETIN 601

Precision Scales



Since 1918

**THURMAN SCALE COMPANY, 1939 REFUGEE ROAD**  
DEPT. CE-2, COLUMBUS, OHIO

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## Sneak-preview of the August issue of CONTRACTORS and ENGINEERS

Among the staff-written feature articles by our field editors:

### NEW FRAMING SYSTEM CUTS ERECTION COSTS

A new framing system for large one-story buildings cuts erection time in half and results in savings up to 25% in the cost of the roof and wall structure.

### SPECIAL RIG BUILT TO INSERT JOINT FILLERS

The contractor on this \$1,950,000 project inserted asphalt-impregnated strips into freshly-poured concrete to produce straight, clean, and economical construction joints. Read about the unusual rig that was used in this operation.

### AT CAPILANO CANYON BRIDGE THE "ARCH FALSEWORK MOVES ON RAILS"

Building an arch bridge across an unpredictable stream, which changes from a gentle trickle to a raging torrent in a matter of hours, imposed two major restrictions on the contractor for a Trans-Canada Highway project. In the pages of next month's CONTRACTORS and ENGINEERS, you can discover how this major problem was solved.

In addition to the above there will be 13 more major articles, plus all regular features. Watch for the August issue. The pages are filled with information that will help you save dollars, make dollars, on every contract.

FOR SALE  
**60-TON CRANE**  
Special 160' Boom — 30' Jib  
Bucyrus-Erie, Model 71-B  
ONLY 400 HOURS  
WILL SELL BOOM & JIB ONLY  
ALSO OVER 100 OTHER ITEMS THAT ARE  
SURPLUS TO OUR CURRENT NEEDS.  
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Rarely will you find an item of industrial, construction or road building equipment that won't run best and cheapest on Continental Red Seal power. The reason lies in specialization—in Continental's long-standing policy of engineering each model precisely to the work to be done. Whatever the machine... whatever its job... you can bank on it for abundant power at the speeds consistent with low fuel and upkeep cost.

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- 1 Lima Model 2400 Serial 3306/4.  
Manufactured September 1954.  
No Front End Equipment.  
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Dragline Equipment ex London.

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Manufactured February 1956.  
Crowd Shovel Equipment.

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Both have Cat. 353 Engines and Torque Converter.  
Price is F.O.B. Peruvian Port.

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**WIMPEYCO, LONDON**  
HAMMERSMITH GROVE,  
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## ENGINEERS INSIST ON FIELD-PROVEN Ryan EQUIPMENT



Engineers responsible for maintenance of right-of-ways, median strips, boulevards, parkways and other large grass areas insist on proved equipment that will do the job fast, efficiently, and without costly breakdowns.

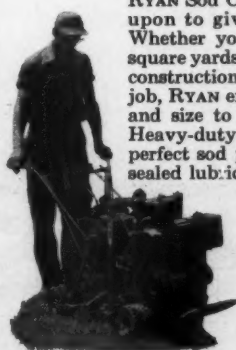
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COMPANY**

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Alpine 8-7741  
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Steel hangers, bolted to the bottom flanges of the outrigger beams, support lintels. These, in turn, support the tops of the cast-stone frames. Previously placed clips, which can be seen protruding from the lintels, are bolted to the frames.



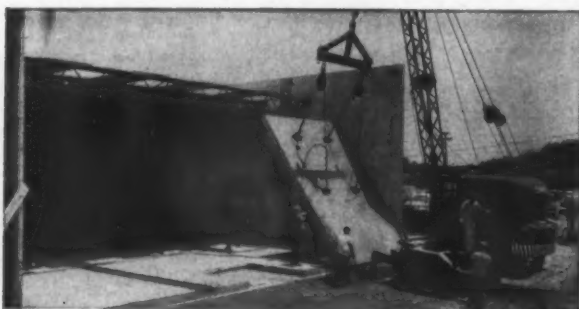
(Continued from page 130)

also embedded to permit a lifting eye bolt to be installed at the job site so that frames could be raised.

The outrigger beams are located on 3-foot centers, the exact width of the frame units, along the spandrel beams. Steel hangers, bolted to the bottom flanges of the outrigger beams, are used to support steel lintels that serve two functions. First, they provide a means of fastening the tops of the cast-stone frames. This is done by bolting previously placed clips at the top of the frame units to the steel lintels.

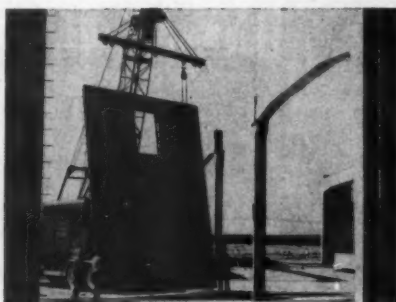
The hangers and lintels also provide support for the extruded aluminum jam adapters of the window frames. These, in turn, support window curtain wall inside the cast-stone frame units. The bolted hangers and lintels are fixed by diagonal knee bracing, welded back to a spandrel beam, to provide lateral support for the U-shaped cast-stone frames.

Between the frame units, which have launched sides to provide the hexagonal design of the lacework, short, precast cross member is positioned, doweled, and grouted in place. This provides the continuous staggered effect of the hexagonal "honeycombs."

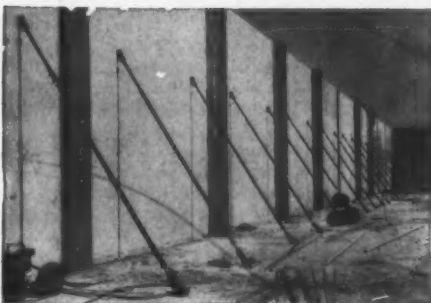


WAREHOUSE

DANIEL CONSTRUCTION CO. PHOTO



SUPERIOR Stress Equalizers, Pick-Up Inserts, and Lifting Angles were used on this panel.



ADJUSTABLE BRACES used for quick and easy alignment of panels

DANIEL CONSTRUCTION CO. PHOTO

## SUPERIOR

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FROM ORIGINAL LAYOUTS  
TO FINAL POSITIONING

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As the pioneer in this field, SUPERIOR has recently developed a special Stress Equalizer for reducing lifting stress in tilt-up panels of over 20 ft. high. It offers two advantages: (1) Less concrete reinforcing steel is required for stresses which occur at time of lift; (2) Permits use of simplified crane rigging.

On your next tilt-up job, avoid expensive crane delays, be assured of safety, and reduce overall costs! Specify the SUPERIOR System.

For details request a copy of Bulletin TU-4

## SUPERIOR

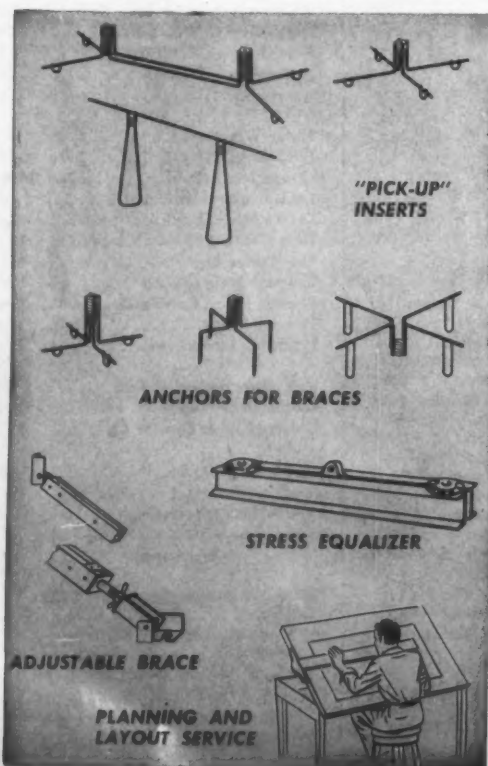
CONCRETE ACCESSORIES, INC.

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2100 Williams Street, San Leandro, Calif.

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Houston Office:  
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#### General features

The structure has three basic elements. They are the 12-story office wing, which is receiving the lacework facade; a 15-story service core adjoining the office wing; and a 10-story auditorium wing that is separated from the office wing by an enclosed courtyard.

The service core is enclosed with light gray-buff masonry; the auditorium has masonry repeating the hexagonal pattern of the cast-stone screen on the office wing.

Visitors to the office wing will be registered in the main lobby and escorted to their destination by means of elevators in the service core. The separation of the office wing from the service core was designed to introduce a direct means of access to each floor under well controlled security conditions. In addition, by setting the service core apart, it was possible to have a more flexible space arrangement for the office layout.

Housed in the service core will be three high-speed, gearless, fully automatic elevators, two staircases, and utility services, such as toilets, mechanical shafts, air conditioning, and fan rooms.

The building, designed by Kelly & Gruzen, architects and engineers, and Kahn & Jacobs, associate architects, is scheduled for completion this year. Harwood & Gould are the structural engineers; Slocum & Fuller, the mechanical engineers; and Sovereign Construction Co., Fort Lee, N. J., is the general contractor. THE EN

For more facts, use Request Card at page 18 and circle No. 409



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